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INFANTILE ECZEMA

WITH ESPECIAL REFERENCE TO THE USE OF A MILK-FREE DIET *

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Although in the last fifteen years a certain amount of light has been shed on that perplexing subject infantile eczema, its etiology is still obscure. It is probably true that what is called eczema in reality represents a variety of conditions, with various etiologies. One of the most interesting aspects in the history of dermatology in the last seventy-five years has been the gradual splitting off from the group called "eczema" of conditions that have been found to be specific diseases in their own right. Scabies, impetigo and pityriasis rosea were all originally classed under eczema. In the future, as regards infantile eczema, definite causes will be found for definite types, and the group of cases in which the etiology is uncertain will become smaller and smaller. A good example of this is the realization in the last few years that a good many types of so-called eczema in adults are due to fungous infection. In 1927 and 1928 Cleveland White [1] and Charles J. White and J. H. Swartz [2] brought forward strong evidence to show that some cases in infants were due to fungi, particularly the type that persists into childhood. In 1928 Professor Bloch of Zurich stated before the American Dermatological Society that he thought the search for internal causes had been greatly overdone, that most cases of adult eczema were of external origin, and that very few cases were due to food or its intermediary metabolism products. I doubt whether this holds true for infants. While certainly many relatively mild and localized lesions have external causes alone, and a few more severe cases which are sensitized to such external irritants as pollens, orris and wool may show extensive skin changes, the few known facts concerning etiology point to an internal one for most severe cases. Whatever internal cause may produce the eczema produces also a skin which is unduly sensitive to external irritants. I have recently had a case the cause of which was a sensitivity to milk protein, in which there was also a sensitivity to light and to wool, both of these agents producing well marked urticaria. Withdrawing milk from the diet cured the eczema and changed the irritability of the skin so that sensitivity to light and wool was no longer present. This child, having been entirely free from eczema for over a year, developed asthma and gave an enormous skin test to orris, to which she had been continuously exposed. The removal of all powder from her environment has kept her free from asthma for the last few months. So there are in some of these cases a multiplicity of agents, both internal and external, which do harm to the individual. There is of course, back of all this, a peculiarity of constitution, of which practically nothing is known, and which probably has something to do with the capillaries and small arterioles of the skin and possibly with the sympathetic nervous system.

In any severe case, a great deal of the skin disturbance is secondary, there is added to the original pathologic condition the effects of scratching, rubbing and infection, represented by scaling, infiltration, crusting and pustulation, and these secondary manifestations must be removed by appropriate local treatment in addition to removing the internal etiologic agent, if one can be found. Indeed, it is probable that most of the pathologic changes of the skin that are seen in any severe case are secondary, engrafted on the primary lesions.

Dr. Pusey [3] of Chicago has expressed the development of an eczema in his usual lucid manner:

> When an inflammatory reaction occurs in a spot in the skin there is produced first a red macule from hyperemia; if the inflammatory process increases, the swelling from the exudate forms a red papule; if the process goes still further, the inflammatory edema invading the epidermis ruptures the epidermis and collects in a cavity, forming a vesicle on a hyperemic base. The contents of this vesicle may become purulent from invasion and breaking down of leukocytes, forming a pustule, or the roof of the vesicle may rupture, and have a blood red point denuded of horny epithelium, and therefore weeping. When proliferation of connective tissue cells occurs we have a chronic inflammatory induration. These changes in our hypothetical spot of inflammation in the skin represent all the types of eczema, erythematous, papular, vesicular, pustular, weeping and squamous. It is the innumerable combinations of these various inflammatory lesions which produce the picture of dermatitis we call eczema.

On account of these secondary changes in the skin, no matter what the internal cause may be, skilled external treatment is of the utmost importance. Dermatologists can discuss this so much better than I can that it is fitting to mention only a few general principles. In the first place, it is necessary to pay a great deal of attention to a severe case of eczema, and the patient should be seen as often as possible. For the worst cases hospitalization is desirable, and I think one reason why one sometimes gets indifferent results is that for various reasons this is not possible; the patient is seen infrequently in the office, and one is not able to control the many small details that are so essential. Meticulous nursing care is just as necessary

* Read before the Philadelphia Pediatric Society, Dec. 9, 1930.

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1. White, Cleveland: New York State J. Med. **27**: 1116 (Oct. 15) 1927.

2. White, C. J., and Swartz, J. H.: Cryptococcosis Epidermica, Arch. Dermat. & Syph. **18**: 692 (Nov.) 1928.

3. Pusey, W. A.: Principles and Practice of Dermatology, New York, D. Appleton & Co., 1926.

to a child with a bad eczema as it is to one with pneumonia, and the ideal though usually unattainable arrangement is a private room, with day and night special nurses.

Prevention of scratching and rubbing and doing away with all woolen clothes are principles of the first importance. Masks, aluminum mittens and cardboard cuffs have not been found satisfactory, and it has been found better to tie the wrists and ankles loosely to the sides of the crib with tapes. Another method, which was devised by the ingenious father of a patient, is to fasten two parallel rods about two feet apart on the head and foot of the crib and to tie the tapes which restrain the child's hands and feet to these in such a manner that the loops of tape slide back and forth on the rods, and the arms are raised above the body instead of being tied down flat. This allows more motion without permitting the hands to get at the face or body. If there is much tendency to rub with the feet, a light masturbation splint, applied just above the knees, is effective. Parents are often disturbed at the apparent cruelty of restraining an infant but, as a matter of fact, the baby soon gets used to it and is usually quite contented. No wool should come anywhere in contact with the baby, and it is necessary for it to wear only an Arnold knit night dress and a diaper. The room, of course, should be kept warm. The child should not be taken out of bed any more than is necessary and, in short, should be treated as a sick child. If the eczema is widely distributed all over the body, it is best to dress the baby in nothing but a diaper and to arrange the bed with sheets at the top and sides, with an electric light in it to keep the temperature in the neighborhood of 80 F. In using ointments, directions should be given not to use them merely once or twice a day but, as soon as the ointment has worn off or has been rubbed off, to apply more. It is also desirable, if there is infiltration and thickening of the skin, and a preparation such as tar ointment is being used, which depends largely for its action on its power of absorbing infiltrate, to rub it in gently and not simply to spread it on. It must also be remembered that in any extensive case of eczema the eczematous places on the various parts of the body are usually of different sorts and in different stages, so that a preparation which would be suitable for an acute weeping patch would not be suitable for a more chronic and infiltrated area in another location. Furthermore, it must be remembered that it may be advisable to change the treatment almost from day to day, according to the particular stage of the lesions. It is of value to explain to the mother what the different preparations are that are being used and to train her when to use one, when another, according to the state of the skin at any given time.

There have been innumerable preparations used in the treatment of infantile eczema, most of which are good if used intelligently, and every one who deals with this disease has his favorites. In looking over my records, I find myself using continually six preparations:

1. A weak solution of equal parts of lead acetate and aluminum acetate, very useful for weeping surfaces.
2. A wash of resorcinol, boric acid, zinc oxide and water.
3. Boric ointment, which, although a simple remedy, is often surprisingly efficient.
4. Compound resorcinol ointment, N. F., sometimes used full strength, sometimes with equal parts of ointment of rose water.
5. An ointment of bismuth subcarbonate, lime water and wool fat.
6. Crude coal tar, perhaps the most useful remedy there is. I am perhaps heretical and may be violating sound dermatologic principles, but I often use it full strength as a paint, especially for the cheeks and for those annoying little cracks behind the ears that are so hard to cure. The most popular preparation of coal tar has been a thick paste of from 2 to 5 per cent strength made with zinc oxide, starch and petrolatum, with which every dermatologist is doubtlessly familiar. I have recently had made up a preparation of 5 per cent tar in equal parts of petrolatum and hydrous wool fat, with a little yellow wax added, and without the zinc oxide or starch. This makes a smooth ointment, which is serviceable for large dry infiltrated areas on the body or for those places in front of the elbows and in back of the knees which are so common in older children.

When an internal etiology for infantile eczema is considered, the evidence points to food or its split products: either simple overfeeding or protein sensitization, or both. In 1912, Towle and Talbot[4] called attention to the frequency of fat intolerance in eczematous babies and to the good results that were often obtained by reducing or omitting entirely the fat in the diet. For several years after this, fat free or low fat diets were popular. It is true that the overfed, overweight eczematous baby, particularly the breast fed one, is a common type, and it is also true that the eczema is likely to improve if the diet is reduced. The difficulty in applying this theory of etiology to infantile eczema in general is that if one takes the trouble to examine critically a large series of cases one finds that most of them are not and have never been overfed, either in general or with fat. Particularly in these days, when cream mixtures have been so generally discarded, it is unusual to find a baby with fat disturbances, and I doubt that it does any good to remove the fat from the diet, unless it is found by the history that the baby is being grossly overfed with fat, or by stool examination that there is an intolerance when the intake of fat may be normal.

The same holds true for starch and sugar. If the stool is mushy, is of a "pig pen" odor, and is found when stained with compound solution of iodine to contain a large amount of undigested starch, it is quite likely that the eczema will improve when the starch intake is reduced. If sugar trouble is present, the stool will be loose, acid and often green, and it probably does no good to reduce the sugar intake unless the baby is grossly overfed with sugar or has such stools. In short, it is desirable, if there has been any error in feeding, or a specific type of indigestion is present, to correct it, usually with some benefit to the eczema. It is quite likely, however, that such disturbances of digestion may be an indirect and not a direct cause of the eczema and that by the irritating effects of split products of the unabsorbed food, such as fatty acids, the intestinal mucous membrane may be made permeable for protein, salts or other unknown substances, which may be absorbed and may be the cause of eczema. There is evidence to show that proteins, particularly, may be absorbed undigested through an injured intestinal mucous membrane and may give rise to sensitization in this way. Stuart[5] has aptly said, "We may conclude that the etiologic agent producing eczema is least effective under conditions of minimal skin and minimal gastro-intestinal irritation."

There is much evidence to show that there is an intimate relationship between infantile eczema and

4. Towle, H. P., and Talbot, F. B.: Infantile Eczema and Indigestion: Preliminary Clinical Study with Illustrative Cases, Am. J. Dis. Child. **4**: 219 (Oct.) 1912.
5. Stuart, H. C.: Boston M. & S. J. **190**: 410 (March 6) 1924.

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protein sensitization. Blackfan,[6] in 1916, was the first to report an extensive series of cases in which skin tests were done, and he found that more than three fourths gave a positive skin test to one or more proteins. Since then, many series have been studied, with positive reactions varying from 50 to 80 per cent. In 1929, O'Keefe and Rackemann [7] reported 239 cases, the largest group to date, with skin tests positive in 52 per cent. I am inclined to think that this represents more nearly the correct figure than the higher percentages of some of the earlier authors. Several series of normal infants and children have been done, with exceedingly few positive tests.

It can be said, then, that without question a group of eczematous babies will give a much higher percentage of positive skin tests than a similar group of normal infants. This does not necessarily mean, however, that the protein which gives the skin test is operative in causing the eczema, for many times positive tests to certain proteins, particularly by egg, will be seen in young bottle fed eczematous infants who have never taken egg. On the other hand, a negative test does not always mean that an infant is not sensitized to some specific protein, for it is quite possible that the sensitization may be too slight to give a positive test but enough to produce eczema (Schloss). As a matter of fact, no infant who has the hyperacute type of sensitization is likely to have eczema, for the ingestion of the protein makes him so immediately ill that it is quite obvious what is causing his symptoms, and the offending food is immediately removed from the diet. It is only those infants with a certain amount of tolerance who have eczema. There are cases that give negative tests to cow's milk, and yet, when this is removed from the diet, the eczema clears entirely and returns as soon as milk is resumed. In infants, most of the sensitization is to foods, but it must not be forgotten that there are infants sensitized to other proteins which are not ingested, such as wool and silk, and that these may occasionally cause eczema.

The fact that so many eczematous infants give positive skin tests cannot be ignored and is one of the best leads in trying to get at the disease; but there is a great deal here that is at present not understood and cannot be interpreted. The whole question of allergy is a complicated one and is as yet in its infancy. That a large proportion of eczematous infants present the picture which has come to be associated with allergy is quite well known: the infants give positive skin tests, they have marked vasomotor instability, and many of them develop asthma later in life, and yet many times they cannot be cured by the removal of the substances to which it is thought they have been found to be allergic. The positive skin test is undoubtedly only a part of the picture, and there is a great deal behind it that is as yet unrevealed.

There are, however, not a few eminently satisfactory cases in which it can be shown by means of the skin tests that there is definite sensitization to one or more specific food proteins, and the eczema can be cured by omitting these from the diet. Egg, milk and wheat are the chief offenders, and in O'Keefe and Rackemann's 125 positive cases, 93 gave reactions to egg, 46 to wheat and 32 to milk, and of the 125 positive cases there were only 12 that did not react to one or more of these proteins.

As a summary, it may be said of the skin tests that, while they often fail to give information of practical value, they occasionally give a clue which is followed by such brilliant results that it is decidedly worth while to do them in every case of severe infantile eczema.

In eczematous infants who are taking an exclusive milk diet, the assumption of a dietary cause forces one to the conclusion that some constituent of milk is causing the trouble. In Schloss's [8] series, 61 per cent gave positive tests to either casein or lactalbumin, in O'Keefe and Rackemann's series 28 per cent, and in my own series 15 per cent. Undoubtedly a considerable number of infants are suffering from eczema on account of the protein of cow's milk, and many expressions of this thought are found throughout the literature. Schloss [8] in 1920, wrote: "It is obvious that definite proof of the allergic nature of infantile eczema must depend on the development of a food free from milk protein, which is capable of maintaining nutrition."

In 1916, Blackfan and, in 1920, Schloss fed a number of babies on a milk free food made from soy bean flour, lactose and washed butter. In all cases the eczema disappeared rapidly, but infants were made ill by the food. In Germany, various investigators have reported excellent results with foods free from milk protein. One is made with rice water as a base, to which finely ground liver, sugar and olive oil are added. Another has ground almonds as a base.

In short, a considerable amount of evidence has accumulated to show that it is theoretically sound to feed eczematous infants on a milk free food and that it is often followed either by a cure or much improvement of the eczema. The difficulty has been that such a food has not been easily available, and the various home-made mixtures which have been used have not been tolerated well by the baby.

It seemed to Stuart and me [9] that it would be worth while to try to develop an easily available and digestible milk free food for use in cases of milk idiosyncrasy and eczema, and with the help of Dr. James L. Gamble we worked out a formula. We then got the assistance of Mr. L. D. Johnson of Mead Johnson & Co., who had prepared for us a large amount of the preparation and christened it "Sobee." The product is a light brown flour of the following composition: soy bean flour, 67.5 per cent; barley flour, 9.5 per cent; olive oil, 19.0 per cent; sodium chloride, 1.3 per cent; calcium carbonate, 2.7 per cent.

Soy bean flour was taken as the source of the protein because it is rich in protein and because it has been carefully studied by a number of workers, who have found that it contains the correct amino-acids for growth. The result of these studies indicates that it can be used as the sole source of protein in an infant's diet. Olive oil was used as the extra fat because it is an inoffensive fat of easy digestibility, particularly when homogenized, as it is in this product, and sodium chloride and calcium carbonate were added because soy bean flour is somewhat deficient in calcium, sodium and chlorine. It contains an adequate amount of magnesium, potassium and phosphorus. It has been shown to contain vitamin B in considerable amounts, but its content of the other vitamins is probably not high. Orange juice and cod liver oil should always be given when the food is used. We did not add sugar because we felt

6. Blackfan, K. D.: Eczema, Am. J. Dis. Child. **11**: 441 (June) 1916.
7. O'Keefe, E. S., and Rackemann, F. M.: Studies in Asthma: Eczema: Its Relation to Allergy, J. A. M. A. **92**: 883 (March 16) 1929.
8. Schloss, O. M.: Allergy in Infants and Children, Am. J. Dis. Child. **19**: 443 (June) 1920.
9. Hill, L. W., and Stuart, H. C.: A Soy Bean Food Preparation for Feeding Infants with Milk Idiosyncrasy, J. A. M. A. **93**: 985 (Sept. 28) 1929.

it best to keep the carbohydrate low, on account of babies who might have a sugar intolerance, and because the physician prescribing the food could add any sugar he desired, according to the indications.

When six level tablespoonfuls of the food are added to 7 ounces of water, the mixture has what we call "full strength" composition: fat, 2.8 per cent; carbohydrate, 4.0 per cent (starch); protein, 4.0 per cent; salts, 1.0 per cent. One fluidounce contains 17 calories. Unless the stools are loose we usually add a level tablespoonful of a mixture of maltose and dextrin to this mixture, which raises the carbohydrate percentage to approximately 7.

The first points to determine with regard to such a food are the following: 1. Is it tolerated by the digestive tract? 2. Will it maintain nutrition? We used the food for more than a year before allowing it to be put on the market and satisfied ourselves as to both of these points. There are a few babies, particularly those more than a year old, who will not take Sobee; most babies take it readily. There are also a very few who vomit it, but this is usually caused by its use in too great concentration, and we never start babies less than 8 months of age on full strength, but rather about two-thirds strength, and are inclined to use it even weaker than this with still younger babies for the first few feedings. The bowel movements are likely to be somewhat looser in consistency than would be the case with a milk diet, but there is rarely a diarrhea. If the stools are too lose, no sugar should be added to the feeding. The youngest baby for whom we have used Sobee was 2 months old, and we feel certain that, if it is used correctly, most babies will take it well and digest it well.

Will it maintain nutrition? Theoretically it should; practically we find that, while taking it, babies make excellent gains in weight and have good color and good tissue turgor. We have fed one baby on it for more than a year, and a good many for several months.

Another method of feeding, which has been recommended in infantile eczema, is the use of heated milks. Prolonged or intense heating causes some change in the proteins which renders them less likely in a sensitized baby to cause symptoms. Variot [10] in France, during 1928 and 1929, published several papers on the subject. He uses milk heated to 108 C. and homogenized. He has employed this method of feeding extensively in eczema and recommends it highly. Kerley,[11] in 1926, advocated the prolonged boiling of milk for six hours and has reported excellent results. Following this line of thought, we have used evaporated milk, in mild cases, or in those in which it seemed wise not to make the somewhat radical change to Sobee feeding. Evaporated milk has been heated to 240 F. in the process of manufacture, and although it is not heated so long as the preparations advocated by Variot and Kerley, it follows the same principle and is much simpler to use.

There are, then, two methods of feeding that seem to be logical: the withdrawal of milk entirely and the substitution of Sobee, or the use of evaporated milk. My own practice is to use Sobee in all cases in which there is a positive skin test to milk protein or in very severe cases even if the skin test is negative, and in all other cases to use evaporated milk.

The results are variable. If there is a fairly severe sensitization to milk protein, as evidenced by positive skin tests, the results with Sobee are uniformly good, and I have had some truly remarkable and most satisfactory cases in which it has been possible to cure entirely very severe and long standing eczema. I have also sometimes had the same sort of results with Sobee in cases with negative skin tests, and not infrequently when I have discontinued Sobee and have attempted to return to milk the eczema has come back and it has been necessary to return to Sobee, with prompt disappearance of the eczema. It is not all so satisfactory as this, however, and I have had many cases in which there was not the slightest benefit from Sobee feeding. As regards evaporated milk, the results are not so striking or so prompt as when milk is withdrawn entirely, but I am distinctly under the impression that they are much better than when ordinary milk is used. I am convinced that these methods of feeding do better than any other, but most emphatically do not wish to give the impression that the problem of infantile eczema has been solved, and that it is only necessary to withdraw milk in order to effect a cure, for this is by no means so. The answer to infantile eczema has not yet been found. All one can say is that these methods of feeding help in a large enough number of cases to make them worthy of trial and represent one weapon to add to the armamentarium in dealing with this obscure and often discouraging disease.

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10. Variot, G.: Bull. et mém. Soc. méd. d. hôp. de Paris **52**: 1719-1726 (Dec. 13) 1928.
11. Kerley: Tr. Am. Pediat. Soc., 1926.

THE IMMUNIZATION OF GOATS AND SHEEP TO POLIOMYELITIS VIRUS

CLINICAL APPLICATION OF THEIR SERUMS *

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In 1910 Flexner [1] attempted the immunization of a horse to poliomyelitis virus but without success, as evidenced by negative neutralization tests. In 1917 Neustaedter and Banzhaf [2] inoculated a horse with the trypsinized virus. The results, however, were unsatisfactory. They later repeated the inoculations but gave large doses of brain and cord suspensions subcutaneously instead of the previous material. The serum obtained neutralized the virus in several trial tests but gave only doubtful results when tried therapeutically in human cases of poliomyelitis. More recently (1929), Weyer, Park and Banzhaf [3] have reported on the production of a more potent antiviral horse serum, which they have also been attempting to purify by precipitation methods.

Pettit,[4] in 1918, reported the successful immunization of a sheep to poliomyelitis virus, extending his methods later to a horse. Both these animal serums have been extensively used by European physicians for human cases, some of the results being reviewed by Etienne [5]

* From the George Williams Hooper Foundation for Medical Research, University of California, and the E. C. Fleischner Memorial Laboratory of the Children's Hospital.

1. Flexner, Simon: The Contribution of Experimental to Human Poliomyelitis, J. A. M. A. **55**: 1105-1112 (Sept. 24) 1910.
2. Neustaedter, Marcus; and Banzhaf, E. J.: An Antipoliomyelitis Horse Serum, J. A. M. A. **68**: 1531-1533 (May 26) 1917.
3. Weyer, F. R.; Park, W. H., and Banzhaf, E. J.: Am. J. Path. **5**: 517-518 (Sept.) 1929.
4. Pettit, A.: Compt. rend. Soc. de biol. **81**: 1087-1088, 1918.
5. Etienne: League of Nations Monthly Epidemiological Report, 1930, numbers 2 and 3, pp. 47-70 and 97-113.

at the Congress of French Pediatricians in 1927. Although he was enthusiastic, other members of the congress were not in accord with his views. In the recent French outbreak,[6] however, favorable reports have been given of the use of Pettit's horse serum.

Stewart and Haselbauer [7] were unable to repeat the sheep immunization according to the method of Pettit. They consider that there is no definite experimental evidence for the use of this serum because Pettit tried only one neutralization in monkeys and failed to use a control with normal sheep serum. No further reports have been made of the inoculation of large animals until recently, when Fairbrother [8] obtained an antiviral serum by the intramuscular injection of a horse. This serum neutralized the virus in vitro but was ineffective when used therapeutically in monkeys. In a later report (1930), Fairbrother and Morgan [9] show that there may be a difference in the basic immunizing capacity of horses for this virus just as there is in the production of diphtheria antitoxin, which may account for the difference in experimental results. They found that an antiviral substance could be produced in one horse but not in a second.

On the other hand, Schultz and Gebhardt,[10] after attempting to immunize various animals, such as the guinea-pig, rabbit, dog, goat, sheep and horse, conclude that these "refractory animals are incapable of producing antisera comparable in viricidal activity to monkey convalescent serum."

While sheep and horses have both been employed in attempted production of antiviral poliomyelitis serum, no reports have been given for the successful utilization of the goat for this purpose. Since human individuals are less likely to be sensitized to this animal than to either of the others, it was thought of value to attempt the immunization of this species in conjunction with that of a sheep.

Two goats and one sheep were used, being given weekly inoculations of centrifugated, unfiltered, 10 per cent brain and cord suspensions from monkeys succumbing to poliomyelitis. Intravenous injections were made for the first nine to ten months, followed by supplementary doses both intracutaneously and subcutaneously. The intravenous route was later discontinued, from 100 to 150 cc. of virus suspension being given intramuscularly and subcutaneously.

Goat 93 was inoculated over the period from Dec. 7, 1928, to Aug. 1, 1930, receiving approximately 5,614 cc. of virus. It was exsanguinated from the carotid one week after the last injection. Goat D was immunized from Feb. 8, 1929, to May 30, 1930, receiving a total of 4,110 cc. of virus. It was also killed within a week by the same method. The immunization of sheep 117 was begun Dec. 7, 1928, and is being continued to date. It has received approximately 7,079 cc. of virus. At no time did any of the animals show symptoms of poliomyelitis. Serum from the three animals was tested at different intervals by the inoculation of monkeys using the method of in vitro neutralization of the active virus. Varying amounts of serum were mixed with a definite amount of virus, either a 2.5 or a 5 per cent suspension, placed at 37.5 C. for two hours and then held on ice over night. One half of each mixture was injected intracranially into a monkey. During the early period of immunization when the virus injections had been given intravenously, the serum from the three animals gave irregular results when tested in monkeys. After immunization by the intramuscular and subcutaneous method had been instituted, however, the in vitro experiments became more uniform.

Subsequent to October, 1929, the serum from nine trial bleedings of goat D neutralized 0.3 cc. of virus in amounts varying from 1 to 0.1 cc. on twenty-two out of twenty-six inoculations in nine separate experiments. Of the other four, one animal died of tuberculosis, while two succumbed to the disease when 1 cc. and one when 0.01 cc. of serum, respectively, failed to neutralize. The monkeys that were given 0.5 cc. and 0.3 cc. each of the same serum with 0.3 cc. of virus were unaffected. On repetition of this experiment, the 1 cc. amount of serum again failed to neutralize, the disease developing, however, only after a prolonged incubation period of three weeks. The dilutions of 0.5, 0.1 and 0.01 cc. of serum all neutralized 0.3 cc. of the virus, while the control animals given normal goat serum and 0.3 cc. of virus all acquired the disease.

Neutralization experiments during the same period with goat 93 serum of eight trial bleedings failed in three out of twenty-one different inoculations in eight separate experiments. Two of these failures occurred with 1 and 0.5 cc. amounts of serum obtained during the early stages of immunization, while the other was with 0.1 cc. of a later bleeding. In all the other tests 1, 0.5 and 0.3 cc. amounts of serum protected against 0.3 cc. amounts of virus.

Three of the total number of animals succumbed to intercurrent diseases, but as two of these died after a fourteen day incubation period without paralysis, they may be counted as successful neutralization tests.

The serum from six trial bleedings of sheep 117 has been used thirteen times in six experiments since October, 1929, but never has shown the potency of either goat serum. Neutralization occurred irregularly on seven occasions in not less than 1 or 0.5 cc. amounts. In the last serum titration, 1 and 0.5 cc. protected against a 5 per cent virus, but no protection occurred with the 0.1 and 0.01 cc. amounts.

Serum from the two goats was tested also by the method recommended by Amoss.[11] Two monkeys were given intraspinal injections of normal horse serum eighteen hours previous to an intrathecal plus intravenous inoculation of immune serum, followed immediately by a large intravenous dose of virus. Serum treatment by the same method was continued on two succeeding days. A control monkey similarly treated with normal goat serum succumbed in six days. The other two animals never developed any symptoms of the disease.

Another experimental series was performed with the goat and sheep serum, the technic of Fairbrother [8] being used in order to compare the potency of these serums with that reported for the horse. Unfortunately the three animals given the mixtures with the least amount of serum and an increase of virus died of bacillary dysentery before the end of the incubation period. Only one of the other monkeys that had been given an equal amount of sheep serum and virus developed paralysis, and then only transiently. The next animal in the series, given a smaller dose of serum, never developed the disease.

6. The Epidemic of Poliomyelitis, Paris Letter, J. A. M. A. **95**: 1189 (Oct. 18) 1930.
7. Stewart, F. W., and Haselbauer, Peter: J. Exper. Med. **48**: 449-455 (Sept.) 1928.
8. Fairbrother, R. W.: Brit. J. Exper. Path. **11**: 43-54 (Feb.) 1930.
9. Fairbrother, R. W., and Morgan, W. T. J.: Brit. J. Exper. Path. **11**: 298-305 (Oct.) 1930.
10. Schultz, E. W., and Gebhardt, L. P.: Proc. Soc. Exper. Biol. & Med. **28**: 30-31 (Oct.) 1930.
11. Amoss, H. L.: Personal communication to the authors.

It was shown, therefore, that the serum from both the sheep and the goat was equally if not more potent than that reported by Fairbrother [8] for the horse. He obtained neutralization only when the ratio of horse serum to virus was equal to or greater than one, while neutralization occurred in the present study with the serum of the three other animals when the ratio was reversed and the virus increased. The control monkeys given normal sheep and goat serum both developed poliomyelitis and became prostrate in seven or eight days after inoculation.

TABLE 1.—*Summary of Results, Using Goat and Sheep Serum, Alone or Combined with Human Convalescent Plasma*

Type of Serum Treatment	Total No. of Cases	Paralysis: None	Paralysis: Transient	Paralysis: Permanent	Death
I. Early					
Goat serum	4	2	2	0	0
Goat and human convalescent	1	0	1	0	0
Sheep serum	8	6	2	0	0
Sheep and human convalescent	3	2	1	0	0
II. After Onset of Paralysis					
Goat serum	1	0	0	0	1
Goat and human convalescent	6	0	0	4	2
Sheep serum	2	1	0	1	0
Sheep and human convalescent	5	1	2	2	0

The results of the in vitro neutralization tests with the goat and sheep serums have proved most encouraging and seem to indicate that a neutralizing substance against poliomyelitis virus may be produced in these animals. When the pooled goat serum was used therapeutically after inoculation of monkeys, the results were negative and the mortality 100 per cent. Nor was paralysis prevented in monkeys when either goat or sheep serum was used prophylactically in varying amounts by the several routes, intramuscular, intravenous or intrathecal, respectively.

Poliomyelitis in monkeys, however, is more severe than in man, because of the prolonged adaptation of the virus to these animals, so that it is of interest to note the effect of both types of serum when used therapeutically in a small series of human cases during the recent outbreak of poliomyelitis in San Francisco. These animal serums, having unknown clinical usefulness, were tried with caution, since it was felt that convalescent serum was of such definite value that it should not be withheld until there was clinical assurance of an equivalent potency in the animal material. At first the latter was given in a few late and very severe cases which had already been treated with large doses of convalescent human serum (cases 8 and 9, table 2). Because of the favorable outcome, it was next used on several early preparalytic patients, but unless a distinct clinical improvement occurred in from twelve to twenty-four hours, convalescent serum also was administered (case 10). It was tried also in a few

TABLE 2.—*Summary of Case Reports*

Type of Serum	Case	Age in Years	Sex*	Duration of Illness Before Treatment	Symptoms	Observations	Temperature	Spinal Fluid Cell Count	Per Cent Polymorphonuclears	Serum Given	Time of Treatment After Onset	Outcome
I.†	1. R. K.	5	♂	24 hours	Headache, stiff neck, fever	Stiff neck, shoulder girdle weakness	101	26	..	50 cc. goat serum	28 hours	Transient shoulder girdle weakness
	2. J. C.	3½	♂	2 days	Headache, stomachache, vomiting, neck and backache	Tremulous, marked neck stiffness	101	87	84	90 cc. goat serum	2 days	No paralysis
	3. E. R.	8	♀	4 days	Nausea, headache, pain in arm and leg	Slight neck stiffness	101	70	..	50 cc. goat serum 50 cc. goat serum 50 cc. goat serum	4 days 4½ days 5 days	No paralysis
	4. F. H.	3	♂	3 days	Pain in right leg, fever	Negative	100	86	..	50 cc. goat serum 50 cc. goat serum	3 days 4 days	Transient left facial and left leg paralysis
	5. S.	20	♀	6 days	Headache, vomiting, chilliness, pain in neck, difficulty in breathing and swallowing	Tremulous, difficulty of speech, extremities cold, facial weakness, neck stiffness, inability to swallow	99.8	305	48	90 cc. goat serum	7 days	Died
II.‡	6. A. B.	4½	♂	2 days	Stomachache, headache, nausea, fever, pain in right leg	Tremulous, neck rigid, left arm and right leg weak	101.8	...	..	50 cc. goat serum 45 cc. conv. serum	2 days 2½ days	Considerable return of muscle power before dismissal
	7. R. N.	9	♀	A cold for 1 week, backache 1 day	Fever, headache, vomiting, backache	Neck very rigid, right forearm weak	102.2	270	22	75 cc. conv. serum 50 cc. goat serum 50 cc. conv. serum 100 cc. whole blood	Late	Died; respiratory paralysis
	8. I. J.	31	♂	4 days	Backache, headache, fever, collapsed trying to walk, unable to void	Very stiff neck, both arms and legs paralyzed, urine retention, respiratory paralysis	102	...	..	100 cc. conv. serum 50 cc. conv. serum 50 cc. goat serum	3 days 4 days	In Drinker respirator for 2 weeks; recovered
	9. H. F.	10	♀	2 days	Headache, fever, vomiting, backache	Stiff neck	102.8	117	52	80 cc. conv. serum 45 cc. conv. serum 100 cc. whole blood 50 cc. goat serum	2 days 2½ days 3 days 3½ days	Facial weakness and difficulty in swallowing, transient; extremely ill for 3 days
	10. E. H.	14	♀	2 days	Fever, malaise, headache, paralysis of left arm	Neck stiff, left arm paralyzed	101.2	253	40	100 cc. goat serum 50 cc. conv. serum 95 cc. conv. serum	2 days 3 days 3½ days	Paralysis of left arm
	11. M. B.	22	♀	1 week	Fever, nausea, delirious	Neck stiffness, delirium	104	90	9	50 cc. goat serum 40 cc. conv. serum 50 cc. goat serum 50 cc. sheep serum	1 week 10 days	Weakness in both legs; the left leg almost completely returned, the right slightly
	12. M. McN.	18	♀	1 week	Headache, backache, difficulty in breathing	Neck stiff, both eyes flaccid, urine retention, respiratory paralysis	103	250	80	100 cc. conv. serum 70 cc. conv. serum 100 cc. goat serum	1 week 8 days 8 days	Died in the respirator

TABLE 2.—*Summary of Case Reports—Continued*

Type of Serum	Case	Age in Years	Sex	Duration of Illness Before Treatment	Symptoms	Observations	Temperature	Spinal Fluid Cell Count	Per Cent Polymorphonuclears	Serum Given	Time of Treatment After Onset	Outcome
I.§	13. G. B.	3½	♂	3 days	Vomiting, fever, pain in legs	No neck stiffness, left leg weak	101.6	26	..	50 cc. sheep serum	3d day	Very slight weakness of left leg
	14. A. M.	10	♂	8 hours	Chill, fever, history of contact	Neck stiff, tremulous	101.4	176	71	100 cc. sheep serum 75 cc. sheep serum	10 hours 24 hours	No paralysis
	15. E. B.	8	♂	2 days	Vomiting, dizziness, headache, stiff neck, fever, backache	Neck stiff, tremulous	102	106	Predom.	70 cc. sheep serum 50 cc. sheep serum	2 days 3 days	No paralysis
	16. G. L.	9	♂	1 day	Vomiting, headache, fever, twitching	Tremulous; stiff neck, slight weakness in right arm	101.2	267	76	75 cc. sheep serum 50 cc. sheep serum	1 day 2 days	No paralysis
	17. S. V.	3½	♀	2 days	Anorexia, fever, pain in left hand	Neck stiff	101	32	..	38 cc. sheep serum	2 days	No paralysis
	18. J. M.	13	♂	3 days	Fever, headache, pain in back	Slight limp, markedly stiff neck, tremor, normal reflexes	101.5	217	20	120 cc. sheep serum	3-4 days	Weakness of right leg
	19. R. S.	7	♂	6 days	Fever, drowsy, stiff neck for 1 day	Slight neck stiffness	100	88	44	45 cc. sheep serum	6 days	No paralysis
	20. J. K.	8½	♂	½ day	Vomiting, fever	Neck stiff	101	16	12	50 cc. sheep serum	10 hours	No paralysis
	21. M. P.	8	♀	1 day	Headache, backache, fever	Neck stiff, tremulous	101.4	220	70	50 cc. sheep serum 75 cc. sheep serum	1 day 2 days	No paralysis
	22. R. H.	19 mo.	♂	6 days	Diarrhea, vomiting	Neck stiff	102	Blood	..	50 cc. sheep serum 45 cc. sheep serum	6 days 7 days	Weakness of right deltoid
II.¶	23. G. L.	22	♂	3 days	Headache, fever	Moderate neck stiffness	102	165	75	165 cc. conv. serum 100 cc. sheep serum	3 days 4 days	No paralysis
	24. M. C.	6	♀	2 days	Headache, vomiting, fever	Tremor, slight neck stiffness	102	302	60	50 cc. conv. serum 45 cc. sheep serum 50 cc. conv. serum 25 cc. sheep serum	2 days 3 days	No paralysis
	25. W. B.	14	♂	2 weeks	Malaise, backache, diplopia; neck stiff for 2 days	Marked neck stiffness	Normal	123	1	50 cc. conv. serum 50 cc. sheep serum	?	Transient paralysis, right deltoid
	26. D. H.	6½	♀	1 week	Headache, backache, neck rigidity	Neck rigidity, marked weakness of left leg	102.2	121	..	50 cc. sheep serum 60 cc. conv. serum	1 week	Marked generalized weakness, urine retention; weakness of left leg; recovered with moderate weakness in left leg
	27. H. A.	5	♂	3 days	A cold, pain, stiff neck, vomiting	Moderate neck stiffness	102	33	..	50 cc. conv. serum 50 cc. sheep serum	.....	A transient right facial weakness
	28. F. B.	9	♂	5 days	Pain, stiffness of neck, drowsy, irrational	Very stiff neck, unconscious for 4 days	101.4 104.4	... 116	.. 2	45 cc. sheep serum 50 cc. conv. serum 45 cc. sheep serum 62 cc. sheep serum	5 days 6 days 7 days	Temperature normal on fifth day; slight transient paralysis of right facial and right leg muscles
	29. Mrs. J.	39	♀	5-7 days	Stiff neck, pains	Moderately stiff neck	101.5	65	..	100 cc. conv. serum 30 cc. conv. serum 40 cc. conv. whole blood 75 cc. sheep serum	About 1 week	Complete recovery
	30. L. F.	7	♀	3 days	Pain in legs	Tremulous, neck stiff, sluggish knee jerk	101	358	74	75 cc. conv. serum 65 cc. conv. whole blood 80 cc. sheep serum	3 days 4 days 5 days	Considerable weakness in both legs, but a fair return

* In this column, ♂ indicates male; ♀, female. ‡ Goat serum and human convalescent plasma. ¶ Sheep serum and human convalescent serum.
† Goat serum only. § Sheep serum only.

cases immediately combined with convalescent serum in the first dosage. Only after it had thus been tried in combination was encouragement given to use it alone.

A total of twelve patients were treated with goat or sheep serum alone in the preparalytic stage (table 1). Of these, eight recovered without any paralysis and four showed only temporary weakness. The combined human and animal serum was given to four patients. Of these, two recovered without paralysis and two showed transitory weakness. There were no deaths and no permanent paralysis in this group.

Several patients entering in a more advanced stage of the disease were treated after the appearance of definite weakness but with the temperature still elevated. Of these, three received animal serum only and eleven both animal and human convalescent serum. These cases are of little experimental value, but certain aspects lent support to the view that these serums had therapeutic value.

The histories and results of treatment for these cases are given in table 1 and summarized in table 2. A few reports are given in detail to illustrate better the type of case treated:

REPORT OF CASES

CASE 1.—J. C., a boy, aged 3½ years, became ill two days before admission, with headache, vomiting, fever and abdominal pain. On the following day he complained of back and neck pains. On entry, his temperature was 101 F., rising to 103 before administration of serum. There was marked tremulousness and neck rigidity. The spinal fluid contained 87 white cells, of which 84 per cent were polymorphonuclears. He was given 90 cc. of goat serum intramuscularly. The temperature dropped to 99.4 by morning and remained normal. He developed no weakness or paralysis.

CASE 2.—E. B., a boy, aged 8 years, vomited and complained of dizziness and stiff neck two days before admission. He had been vaccinated two days previously and his parents thought that his illness was due to the vaccination. On the following day he was drowsy and restless and complained occasionally of headache. On entry, the temperature was 102. He was tremulous and had moderate neck stiffness. The spinal fluid white cell count was 106, with a preponderance of polymorphonuclears. Seventy cubic centimeters of sheep serum

was given intramuscularly. The temperature continued from 102 to 102.6 the next day, but there was no muscular weakness; 50 cc. more of sheep serum was given and the temperature dropped to normal in the next twenty-four hours. The neck stiffness rapidly decreased. He showed a slight weakness of the left deltoid and triceps for about ten days.

CASE 3.—A. M., a boy, aged 10 years, had a chill eight hours before admission; his temperature rose and he complained of neck stiffness. He had been sleeping with an uncle who was ill with poliomyelitis. There was a slight neck stiffness, marked tremulousness and a temperature of 101.4. The spinal fluid white cell count was 176 cells per cubic millimeter, with 71 per cent polymorphonuclears. He was given 100 cc. of sheep serum intramuscularly. The temperature rose to 103.4 during the next eight hours. Eighteen hours after admission it was 101.4 and he was given 75 cc. more of sheep serum. The temperature reached normal in thirty-six hours and remained so until the onset of serum sickness on the eighth day. He recovered without any weakness or paralysis.

CASE 4.—M. P., a girl, aged 8 years, had headache, backache, anorexia, fever and vomiting for twenty-four hours before entry. The temperature was 101.4; the neck was markedly stiff and the hands were tremulous. No muscle weakness nor reflex changes were noted. The spinal fluid showed 220 white cells with 70 per cent polymorphonuclears. Fifty cubic centimeters of sheep serum was given intramuscularly. The temperature the next day was from 101 to 102.8. Seventy-five cubic centimeters more of sheep serum was given. She had a low fever for three more days but improved clinically. The neck stiffness disappeared rapidly and no weakness developed.

CASE 5.—H. F., a girl, aged 10 years, had been exposed to a poliomyelitis patient five days previously. Two days before entry she was tired and listless; the next day she had a headache, was feverish, was nauseated, and vomited several times. On admission she complained of severe headache and pain in the neck. The temperature was 102.8 at noon. The patient was tremulous and showed a slightly positive Kernig's sign and hyperactive reflexes. She was given 80 cc. of human convalescent serum intramuscularly on entry. Spinal fluid showed a cell count of 117 cells per cubic millimeter with 52 per cent polymorphonuclears. The temperature was 103.8 in the evening and 103.2 the next morning, at which time an additional 45 cc. of convalescent serum was given. At noon, 100 cc. of convalescent blood was administered by transfusion. The afternoon and evening temperatures were 103.4 and 104.4, respectively. A left facial weakness and difficulty in swallowing had developed and the patient was irrational. Fifty cubic centimeters of goat serum was given intramuscularly at 10 p. m. Two hours later the temperature was 101.4, and in nine hours it had dropped to 100. The child had a little fever for several days, but the facial weakness and the difficulty in swallowing rapidly disappeared. She was dismissed in excellent condition, with no residual weakness.

COMMENT

Too small a group was treated to justify more than an impression that these serums have clinical usefulness. It is to be hoped that future experimentation will justify this impression, since the use of such serums of known determinable potency would do much to clarify the uncertainty that exists regarding convalescent serum with respect to dosage and potency.

Why Do We Weep?—To relieve the body of its pent-up state and to provide an outlet for the energy surplus is very much better than to leave this energy to smolder in the system. The clarifying and beneficent effects of weeping are likened by Backmann to the effects of a rain after a thunder storm: "Ein stummer Schmertz wirkt beängstigend wie ein Gewitter ohne Regen. Was für die Entspannung der elektrischen Dämpfe des Gewitter der Regen bedeutet, das bedeuten die Tränen für den Organismus."—Lund, F. H.: Emotions of Men, New York, McGraw-Hill Book Company, Inc., 1930.

MODERN TREATMENT OF INCREASED INTRACRANIAL PRESSURE *

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The causes of increased intracranial pressure in the order of frequency of occurrence are: (1) skull fracture; (2) brain tumor; (3) meningitis; (4) cerebral hemorrhage and thrombosis; (5) subarachnoid hemorrhage; (6) hydrocephalus due to inflammation around ventricular foramina; (7) hypertension associated with headache; (8) acute cerebral edema.

It was evident that a clearly formulated plan of treatment had never been devised to cope with the main general result of these varied morbid conditions. It was further evident that the problem could be solved

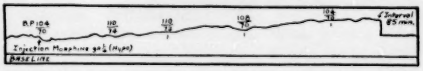

Fig. 1.—The effect of morphine on intracranial pressure. The tracing covers a period of about eighty-five minutes.

only by the proper application of exact physiologic knowledge regarding intracranial pressure changes brought about by protean factors such as sleep-waking, changes in posture, respiratory variations, and the exact effects of many different drugs. Accordingly, through 1927, extensive experiments were carried out on patients having bone defects in the skull, beneath which defects the dura had been cut and left unsutured.

Pressure conditions inside the skull were transmitted by tambour to a pointer recording on a revolving drum. The detailed results of these investigations were reported in December, 1927, to the Association for Research in Nervous and Mental Disease.[1] The results germane to the present paper are briefly as follows:

Sleep is accompanied by an increase of intracranial pressure; the act of wakening is coincident with a

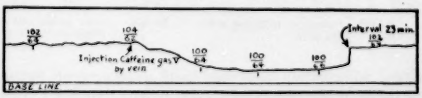

Fig. 2.—The effect of caffeine sodiobenzoate administered intravenously; blood pressure readings are also shown.

decrease of this pressure. Morphine, glyceryl trinitrate, hypotonic solutions and the assumption of the horizontal position all cause heightened pressure within the skull; this was true also as regards coughing, stool straining, struggling and ether anesthesia. On the other hand, intracranial pressure was invariably reduced by raising the head above the level of the heart.[2] Caffeine sodiobenzoate given below the skin or into a vein reduced intracranial pressure promptly; the same was true of hypertonic solutions, periodically sustained deep breathing, and the removal of cerebrospinal fluid by the lumbar route.

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1. Stevenson, L.; Christensen, B. E., and Wortis, S. B.: Some Experiments in Intracranial Pressure in Man During Sleep and Under Certain Other Conditions, Proc. A. Research Nerv. & Ment. Dis., December, 1927.
2. DeMartel of Paris makes practical use of this phenomenon by operating on infratentorial lesions with the patient seated.

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METHODS OF TREATMENT

Lumbar Puncture.—Removal of cerebrospinal fluid by the lumbar route is performed early in most cases for both diagnostic and therapeutic purposes. Whenever possible, a spinal manometer should be placed in the puncture needle that pressure may be gaged from the beginning. When pressure within the skull is known or suspected of increase beyond the normal—from 60 mm. of spinal fluid pressure (water) to 200 mm.—the abstraction of fluid should be carried out drop by drop. If the fluid is clear, bloody, xanthochromic and clear, or xanthochromic and tinged with blood, it is best to be content with removing 10 or 15 cc. If it is purulent, drainage should be continued as long as the flow is free; this procedure should be repeated daily throughout the acute phase. One should further fluid reabsorption by the use of drugs and hypertonic solutions (to be described later) rather than

OUTLINE OF PROCEDURE IN CASES WITH INCREASED INTRACRANIAL PRESSURE

PATIENT IN WARD

Temperature, Pulse, Respiration

CLINICAL EXAMINATION	LABORATORY
General Examination	Blood pressure
Head	Urine analysis
Cardiorespiratory	Blood chemistry
Gastro-intestinal	Blood count
Genito-urinary	Roentgenograms (when indicated)
Appendages	Lumbar puncture (Both diagnostic and therapeutic in cases of head trauma)
Neurologic Examination	Include: Cell count
Cranial nerves	Globulin
Motor power	Sugar reduction
Coordination	Manometric studies
Reflexes	Culture (in some cases)
Sensory status	Gastric lavage and analysis
	If all above are normal and patient is in coma

Treatment

1. Lumbar puncture.
2. Hypertonic solution of dextrose by vein (100 cc. of 50 per cent three times daily).
3. Caffeine sodiobenzoate, 7½ grains (0.5 Gm.) every four hours (hypodermically).
4. Rectal taps of 25 per cent solution of dextrose, 4 ounces (120 cc.) every four hours.
5. Elevate head of bed from 15 to 45 degrees.
   Skull trephine with ventricular puncture in posterior fossa and in third ventricle tumors, if these measures prove inadequate.
6. Right subtemporal decompression in comatose patients with marked papilledema who do not react to previous procedures within two or three hours.
7. Antimeningococcus serum in suitable cases.

depend at the onset on lumbar drainage for dramatic results.

It must be here stated that lumbar drainage should be avoided in the suspected presence of a neoplasm in the posterior fossa or involving the third ventricle; sudden death from medullary pressure against the bony ring of the great foramen has occurred with sufficient frequency to impose caution. The removal of fluid in such instances is a skilled surgical procedure to be accomplished by skull trephine and the insertion of a brain cannula into the posterior horn of the right lateral ventricle.

Cistern puncture is of value when drainage from below is stopped by inflammatory exudate; it is a procedure requiring experience, from work on cadavers, and skill.

Hypertonic Solutions.—The next step in treatment is the intravenous injection of a solution of hypertonic dextrose of 50 per cent strength. One hundred cubic centimeters of this solution may be thus given twice or thrice in twenty-four hours. The sterile solution is purchasable in 50 cc. ampules.

Not only is such treatment serviceable for intracranial dehydration and pressure reduction, but it introduces a readily available food. It is valuable in combating acidosis caused by prolonged vomiting. Hypertonic saline solution in 25 or 30 per cent strength may be used in 200 or 300 cc. doses if dextrose is not available. Its lack of food value is, however, obvious.

Hypertonic solutions in contact with mucous membrane: The membrane of choice is that of the rectum or vagina; the solution, hypertonic solution of dextrose 25 or 30 per cent, saline solution 25 or 30 per cent, or saturated solution of magnesium sulphate; all of these medicaments may be given slowly in 4 ounce (120 cc.) doses every four hours, or continuously by rectal drip. Administration by stomach tube is less satisfactory in that vomiting may be induced with an acute rise of intracranial pressure as a result.

Caffeine Sodiobenzoate.—This drug injected under the skin or into a vein in doses of 7½ grains (0.5 Gm.) reduces intracranial pressure for forty-five minutes. It may be repeated every two or three hours and may well be interspaced between rectal taps or intravenous injections of hypertonic solutions. The pressure-reducing effect of caffeine has been measured by spinal

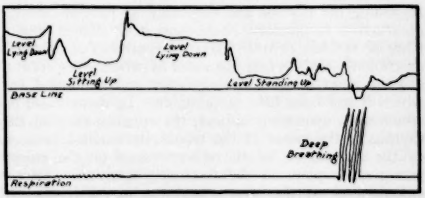

Fig. 3.—Changes of intracranial pressure due to deep breathing and changes in position.

manometer: within three minutes of injection, spinal fluid pressure drops from 20 to 50 mm. in the tube. There is no change in the systemic blood pressure during these events. As has been already shown, morphine raises pressure within the skull. This prevents its use as an anodyne in the cases under discussion unless accompanied by a pressure-reducing substance. Therefore it is our practice to employ it only synchronously with injections of caffeine, dose for dose (morphine sulphate, one-fourth grain, or 0.016 Gm., with caffeine sodiobenzoate 7½ grains, or 0.5 Gm.).[3] Solution of pituitary, the nitrites and large doses of epinephrine all increase intracranial pressure. They are therefore all to be avoided.

Posture.—It has been considered good practice heretofore in the management of increased intracranial pressure, especially when the pressure is due to skull injury, to keep the patient horizontal with the head at the same level as the heart. The curves in figure 3 show clearly that this custom is not based on sound physiology. Accordingly, for many years at Bellevue Hospital we have placed such patients in Goetsch beds with the head and trunk elevated at an angle of from 15 to 60 degrees from the horizontal position of the rest of the body.

3. A future paper will deal with the complementary effects of other drugs on the physiology of the central nervous system.

Surgical Procedures.—Trephining to pass a brain cannula into the higher ventricular system on the right side has already been described; such a cannula is usually employed merely for the removal of redundant fluid. It may, however, also serve as a pathway for the administration of specific serums or possibly drugs, in cases not amenable to being drained by the cistern or lumbar route. The remaining decompressing surgical operations are suboccipital decompressive craniotomy and subtemporal decompressive craniotomy. These major operations should not be used until all the other procedures already described have proved futile and incapable of arresting the progressive signs of steadily increasing pressure within the skull.

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CHRONIC STRIDOR IN CHILDHOOD

SOMETIMES ERRONEOUSLY ATTRIBUTED TO ENLARGEMENT OF THE THYMUS *

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An extensive amount of literature is to be found regarding the thymus and especially its part in causing obstructive respiratory phenomena and sudden death. Chronic stridor, chronic hoarseness, attacks of cyanosis or choking, and certain instances of wheezy respiration are the chief symptoms in infancy and childhood for which it has been held accountable. In many cases in which such symptoms appear, the conclusions that the thymus is the cause of the trouble is reached because of the appearance of the shadow seen on the roentgenographic plate or the fluoroscopic screen. Direct examination of the larynx and trachea is frequently omitted. Reference to such a method of examination is rarely found in the literature dealing with the subject of the thymus, but Pancoast [1] recently emphasized the desirability of endoscopic examination in addition to roentgenologic study of these cases.

We have selected for study cases in which the aforementioned symptoms were prominent and certain cases in which a diagnosis of enlarged thymus had been made elsewhere. Cases in which the thymus had been suspected as a cause of convulsions, pylorospasm, psoriasis and a number of other conditions unrelated to the respiratory tract were not included. The cases selected form a group which gives a fairly dependable idea of the general incidence of the various conditions included and indicates the frequency with which some of those conditions are attributed to enlargement of the thymus.

INTRINSIC CAUSES

Congenital Laryngeal Stridor (congenital relaxation of the larynx, congenital atony of the larynx, congenital atony of the vocal cords).—This condition has been known for many years, particularly by those interested in diseases of the larynx. As has been pointed out by Hill,[2] it is usually noticed at birth. It consists of an inspiratory rattling noise, occasionally accompanied by an expiratory croak. It is increased and becomes more noticeable when the child cries, and it may disappear completely when the child is quiet. There is no alteration from normal in the voice sounds. Besides these constant characteristics there may be attacks of cyanosis, and dyspnea may be sufficient to produce retraction of the thorax and abdomen. The prognosis is good; it is highly certain that the condition will disappear in the second or third year of life. It is beyond the scope of this paper to enter into a consideration of the various hypotheses dealing with the underlying etiology of congenital laryngeal stridor. These have been considered in detail by Hill, by Thomson and Turner,[3] by Bagg [4] and by others.

The most common error in diagnosis is to attribute these symptoms to an enlarged thymus. Of thirty infants with congenital stridor observed at the Mayo Clinic in the last ten years, fifteen (50 per cent) were referred with stridor as the chief complaint. In nine of these fifteen cases (60 per cent) a diagnosis of enlarged thymus had been made, and in all but one of them roentgen treatment had been given without any benefit. In the accompanying table are data concerning thirteen patients admitted with a diagnosis of enlarged thymus and the final diagnosis in each case.

CASE 1.—A boy, aged 8 weeks, was admitted with a complaint of "air swallowing" and difficulty in nursing since birth. Inspiratory stridor had been noticed. The condition had been diagnosed as enlarged thymus. Examination revealed that the child apparently swallowed air and that the abdomen became distended. The head was held extended. Direct laryngoscopic examination disclosed a congenitally flaccid larynx; the epiglottis was very dependent; the vocal cords and the aryteno-epiglottic folds billowed inward when the child breathed so that they approximated the median line. Treatment was not instituted, but the parents were reassured regarding the condition. The child made an uneventful recovery.

Patients Admitted with Diagnosis of Enlarged Thymus

Case	Age, Months	Previous Treatment by Roentgen Rays	Final Diagnosis
1	2	+	Congenital relaxation of larynx
2	14	+	Congenital relaxation of larynx
3	12	+	Cerebral palsy Congenital laryngeal stridor
4	12	+	Laryngospasm
5	12	+	Tracheal subglottic diaphragm
6	36	+	Tumor of thymus
7	8		Congenital relaxation of larynx
8	22	+	Congenital relaxation of larynx
9	5	+	Congenital relaxation of larynx
10	12	+	Congenital relaxation of larynx
11	18	+	Congenital relaxation of larynx
12	6	+	Congenital relaxation of larynx
13	24	+	Multiple papillomas of larynx

CASE 2.—A boy, aged 14 months, had been well until 6 months of age, when some hoarseness and difficulty in breathing had been noticed. Following a diagnosis of enlarged thymus, fifteen treatments by roentgen rays had been given without causing improvement. Direct laryngoscopic examination disclosed that the epiglottis was folded back over the upper aperture of the larynx much more than usual and that there was redundancy of the soft tissues in the upper part of the larynx, which apparently accounted for the hoarseness and dyspnea.

Congenital Laryngeal Stridor of Cerebral Origin.—According to some authors there may be congenital laryngeal stridor based on a disturbance of the central nervous system at the source of innervation of the

* From the Sections on Pediatrics and on Laryngology, Oral and Plastic Surgery, the Mayo Clinic.

1. Pancoast, H. K.: Roentgenology of the Thymus in Infancy, Am. J. Dis. Child. **40**: 452-453 (Aug.) 1930.
2. Hill, F. T.: Congenital Laryngeal Stridor, Laryngoscope **40**: 44-54 (Jan.) 1930.
3. Thomson, John; and Turner, A. L.: On the Causation of the Congenital Stridor of Infants, Brit. M. J. **2**: 1561-1563 (Dec. 1) 1900. Turner, A. L.: A Discussion on Congenital Stridor (Laryngeal and Tracheal), ibid. **2**: 1485-1489 (Nov. 24) 1906.
4. Bagg, Claire: Beiträge zur Aetiologie des Stridor congenitus, Monatschr. f. Kinderh. **45**: 102-115 (Oct.) 1929.

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muscles of the larynx. It may appear to be rather far fetched to include such a condition as infantile cerebral palsy in the consideration of congenital laryngeal stridor. Nevertheless, because of stridorous respiration which at times is present in these cases, a diagnosis of enlarged thymus has been made. Several patients with cerebral palsy have been admitted to the clinic with this diagnosis, after treatment by roentgen rays had been given.

CASE 3.—A girl, aged 1 year, who had been born after prolonged labor in which forceps were used, had not cried until she was 2 weeks of age. On the third day convulsions had occurred and had been repeated until she was 2 weeks of age. Her development had been delayed; at the age of 1 year she was unable to sit, walk or talk. Noisy respirations had been noticed at 2 months of age, together with periods of holding the breath or apnea. General examination disclosed cerebral palsy, with incoordination and spasticity; the movements were athetoid, and there was inspiratory-expiratory stridor. Direct laryngoscopic examination revealed normal vocal cords and glottis. The epiglottis hung completely over the larynx; the aryteno-epiglottic folds were seen plainly; the hypopharynx was filled with mucus. The laryngologist felt that this condition might also be due to the cerebral injury.

Bilateral Abductor Paralysis.—New [5] previously reported in detail the case of a girl, aged 10 months, who was brought to the clinic on account of difficulty in breathing, which had been noticed at birth. About once a month she had had severe attacks of cyanosis and dyspnea; the latter were more marked during expiration than during inspiration. The attacks lasted for a few minutes and ended with long, crowing expiration. The child was undeveloped, was mentally retarded, and had a noisy, rattling respiration. Direct laryngoscopic examination disclosed the epiglottis to be folded on itself; both vocal cords were in the median line and moved up and down on respiration. There was a very small slit through which the child breathed. The aryteno-epiglottic folds were not adjacent, as in congenital laryngeal stridor. The condition improved so that at the age of 2 years the child did not have any respiratory difficulty. This is an example of bilateral abductor paralysis mentioned by Robertson [6] and others.

Tetany.—There is a certain type of chronic laryngeal stridor, the cause of which may be strongly suspected from the history and in which laryngoscopic examination is necessary. This is the crowing sound which occurs as the so-called laryngospasm or laryngismus stridulus of spasmophilia or tetany. Since the general use of antirachitic measures, however, manifest tetany has become much more rare.

CASE 4.—A boy, aged 12 months, was admitted to the hospital because of sudden attacks of choking, with slight cyanosis, which had begun four and a half months before. The attack had usually ceased promptly when the child had been picked up. A diagnosis of enlarged thymus had been made and two treatments with roentgen rays had been given without benefit. Inspiration was frequently accompanied by peculiar crowing sounds. Roentgenograms of the wrists gave evidence of the presence of active rickets. The Chvostek sign was present. The concentration of blood calcium was 6.2 mg. instead of the normal of 9 to 11 mg. for each 100 cc. Roentgenograms of the thorax gave evidence of slight widening of the superior mediastinum, which was interpreted as the shadow of the thymus. The diagnosis was rickets and tetany, with laryngospasm as an outstanding symptom. The usual treatment, including cod liver oil and a properly arranged diet, was advised. The child had no further trouble after one week on this regimen.

Neoplasms.—Various new growths have been reported as occurring in and about the larynx in infants and children. Although direct inspection will yield a definite idea as to the type of lesion in most cases, diagnosis is frequently made without such observation, and errors naturally follow.

The most common neoplastic lesion of the larynx in infants and children is the papilloma, which, when present, is almost always multiple.[7] Although the condition is by no means rare, there is surprisingly little to be found out about it in the literature on pediatrics. This may be due to the fact that beyond the field of diagnosis it is essentially a problem for the laryngologist. Nevertheless, the apparently ever-present tendency to ascribe stridor and hoarseness to enlargement of the thymus has occurred in these cases also. In the last ten years, multiple papillomas of the larynx have been found in forty cases among children at the Mayo Clinic. The usual history was of hoarseness and shortness of breath, which dated from the age of 1 month or 2 months. There might have been some wheezing or cough, occasionally cyanosis, and rarely dyspnea sufficient to warrant emergency tracheotomy. The condition is often mistaken for congenital stridor, asthma and enlarged thymus.

New [5] reported a case of angioma in a child, aged 9 months. At the age of 3 months, rattling was noticed in the throat when the child was in the recumbent position. There had been no cyanosis. The general examination, including roentgenologic investigation of the thorax, gave negative results. Laryngoscopic examination disclosed a dark bluish tumor in the left subglottic region bulging to the median line of the trachea. The mucous membrane was smooth. The tumor measured 1.25 by 1.75 cm. Angioma was diagnosed clinically. Response to treatment with radium was satisfactory.

Similar cases have been reported by New and Clark [8] and the general subject has been summarized by Moore.[9] Other types of neoplasm occur still more rarely. It would be expected that their manifestations would simulate those of the more common tumors. Rarely papilloma, which is to be considered as a benign lesion, undergoes malignant change.

Subglottic Diaphragm.—The following case is that of a still more rare condition; namely, subglottic diaphragm:

CASE 5.—A girl, aged 1 year, was brought to the clinic with a tracheotomy tube in place. She had had asthmatic breathing at intervals since birth. Occasionally she had had a croupy cough. Three and a half months before, emergency tracheotomy had been done before laryngoscopic examination was possible. She had not been able to get along without the tracheotomy tube. Diagnosis of obstruction due to the thymus had been made and radium had been used on the outside of the neck. On examination at the clinic there was a roentgenographic shadow in the superior mediastinum which was thought to be due to the thymus. Laryngoscopic examination disclosed a whitish obstruction in the subglottic region which was thought to be tissue above the tracheotomy tube. Later examination revealed a diaphragm across the anterior part of the larynx above the tube. The tube was removed and the breath was found to be unobstructed. No further roentgen

5. New, G. B.: Congenital Obstruction of the Larynx and Pharynx, J. A. M. A. **81**: 363-366 (Aug. 4) 1923.
6. Robertson, W.: Laryngeal Paralysis in Infants, Lancet **2**: 600-601 (Sept. 10) 1892.
7. New, G. B.: Treatment of Multiple Papilliomas of the Larynx in Children, Ann. Otol., Rhin. & Laryng. **30**: 631-642 (Sept.) 1921.
8. New, G. B., and Clark, C. M.: Angiomas of the Larynx: Report of Three Cases, Ann. Otol., Rhin. & Laryng. **28**: 1025-1050 (Dec.) 1919.
9. Moore, Irwin: Further Remarks on Angiomata of the Larynx, J. Laryngol. & Otol. **38**: 57-65 (Feb.) 1923.

and radium treatments were used. One year later the tracheotomy tube was removed permanently and the wound about the tracheal fistula was closed. No further trouble ensued.

EXTRINSIC CAUSES

Among the extrinsic causes of laryngeal stridor the most prominent is tumor. Tumors in the upper part of the mediastinum and tumors of the cervical region which encroach on the larynx and upper part of the trachea sufficiently to cause stridor, dyspnea and cyanosis are not common. This statement is made in spite of a tremendous amount of literature dealing with so-called enlarged thymus. At present, the questions as to what constitutes an enlarged thymus and what symptoms may be considered as being due to the thymus, whether it is enlarged or not, are not answered definitely.

Tumors of the Thymus.—Primary tumors of the thymus are exceedingly rare. True epithelial tumors, such as have been designated thymoma by Grandhomme,[10] are seen extremely seldom. They may attain huge size and may encroach on all structures in their vicinity.

CASE 6.—A boy, aged 3 years, had been well until two months previous to his admission to the clinic. His trouble had apparently begun after he had become chilled while in bathing. He had had a cough, which had persisted and had become wheezy in character. Rattling respiration had appeared. There had been dyspnea and cyanosis on crying. A diagnosis of enlarged thymus had been made elsewhere and four treatments with roentgen rays had been given. Examination disclosed marked expiratory-inspiratory stridor. The expiratory breath sounds were harsh. Over the entire thorax, crepitant whistling râles were heard. Roentgenograms of the thorax gave evidence of a large shadow in the superior mediastinum. Cyanosis and sudden death occurred without warning while the examinations were in progress. At necropsy a large, firm tumor was found in the region of the thymus, encroaching on all the adjacent structures. The trachea was constricted. At first it was thought to be a thymoma, but further examination disclosed the presence of cells of the lymphoblastomatous type, both in the tumor and in the adjacent lymph nodes.

Lingual Thyroid Gland.—As is well known, embryonic rests of thyroid tissue may be found anywhere from the base of the tongue, along the course of the embryonic thyroglossal duct, to the normal situation of the thyroid gland. If such a rest occurs in the base of the tongue and later grows actively, it results in what is termed a lingual thyroid gland. New [5] reported such a case. The symptoms in these cases may be alarming, although examination would reveal the trouble and indicate the proper therapeutic steps to be instituted. Retention cysts at the base of the tongue may produce some symptoms of respiratory distress in new-born infants.

Retropharyngeal Abscess.—This paper is not concerned with acute, septic, retropharyngeal abscess, but, occasionally, during the course of tuberculosis of the cervical region, a cold abscess forms and points to some portion of the pharynx. If this is so situated as to encroach on the aperture of the larynx, stridor may result. Although it is of rare occurrence, it should be kept in mind in cases of obscure stridor and dyspnea.

Congenital Flaccid Tongue.—This term is self-descriptive. Although the condition is not common, its presence may lead to considerable difficulty in diagnosis and may test the ingenuity of the physician in the matter of treatment. In a case reported by New [5] a celluloid tube was introduced into the pharynx and held in place by a crossbar attached by linen thread and adhesive tape to the outer surface of the cheek. After serving its purpose satisfactorily for a time, it was possible to discard it without return of symptoms.

10. Grandhomme, quoted by Delafield, Francis; and Prudden, T. M.: A Textbook of Pathology, ed. 12, Philadelphia, William Wood & Co., 1923, p. 376.

COMMENT

This report does not deal with all known causes of laryngeal and tracheal stridor in infants and children. It does, however, record a variety of conditions which have caused types of stridor and in which the underlying abnormal anatomy has been definitely determined; the admissions extended over a period of ten years.

During the time that these patients were cared for at the Mayo Clinic, no child was seen with symptoms referable to hypertrophy of the thymus. In the same period, no death which was attributable to hypertrophy of the thymus occurred, either spontaneously or during or following anesthesia in a large number of surgical procedures, among the newly born and older infants.

Numerous articles have appeared in both medical and lay journals in which attention is called to the necessity of determining the absence of enlargement of the thymus in all children who are to be subjected to anesthesia or operation. According to the authors of these articles, if an enlarged thymus is found, preoperative treatment with roentgen rays over the thymic region is said by some to be desirable and by many others to be imperative. To a large number of physicians and to laymen, the thymus has become a cause of undue concern. This is reflected in an article published in one of the leading lay journals of health. In analyzing a hypothetic case in which tonsils and adenoids were removed, the author [11] wrote, "Apparently no x-ray was taken to be sure that there was not a persistent thymus present. Apparently such was the case judging from the serious embarrassment to breathing which took place while the child was going under the anesthetic."

An occurrence similar to the hypothetic case just mentioned in which neglect might have been charged, with as much justification, was that of a child, aged 8 years, in which a diagnosis was made of infantile cerebral palsy. There was a deformity of the foot. Manipulation and application of casts were advised. These were carried out under ether anesthesia. During the operation, respiratory action became irregular and weak. The manipulation was discontinued, but the child died within a few minutes. At necropsy the result of examination was negative. The thymus weighed 35 Gm., and the remainder of the lymphatic structures appeared rather unusually prominent. A diagnosis of status lymphaticus, or enlarged thymus, might easily have been made had it not been for the fact that a fat stain was made of the tissue of the lung. This showed the presence of a widespread fat embolism. Undoubtedly, similar cases have occurred and have been overlooked because of failure to make such examination.

Although general and roentgenologic examination of the thorax is done as a routine on all children seen at the Mayo Clinic, none have been subjected to roentgenologic treatment preliminary to operation. However, a great deal of attention and preoperative care have been given to those children manifesting evidence

11. Richardson, F. H.: The Runabout Child and His Problems: VI. Tonsils and Adenoids, Hygeia 7: 157-158 (Feb.) 1929.

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of infection of the upper part of the respiratory tract, fever, anemia, renal or cardiac disease, malnutrition, gastro-intestinal disease and other conditions which might increase the risk of operation. It is often found necessary to postpone surgical procedures for varying lengths of time in order that such conditions may correct themselves or be corrected.

SUMMARY

The diagnosis of enlarged thymus is frequently made in cases in which further examination has disclosed other conditions as the cause of symptoms. Stridor, dyspnea, hoarseness, spells of cyanosis and wheezy and noisy respiration can usually be accounted for on other bases than that of enlarged thymus. Laryngoscopic examination is frequently essential for definite diagnosis. Enlargement of the thymus can seldom, if ever, be established as a cause of death. Preoperative examination and care of infants and children should be directed toward finding and correcting all conditions affecting surgical risk. Unwarranted publicity has been accorded the assumption that enlargement of the thymus accounts for much morbidity and mortality in infancy and childhood. In our experience it has been unnecessary to carry out preoperative roentgen treatment of the thymus.

FACTS AND FALLACIES CONCERNING FOREIGN PROTEIN AND VACCINE THERAPY *

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Methods of treatment of disease, like styles and fabrics of dress, change from year to year and from decade to decade, and in both even a brief historical review will demonstrate a continued repetition of older practices somewhat modified to meet new conditions and modes. In matters of dress, which vary from long to short and back again, the original object of clothing to protect the body from cold and injury seems at times to be lost sight of, and in medicine newly observed or striking effects lead to the revival or popularization of remedies without due regard to ultimate results, on the assumption that these effects are necessarily beneficial to the patient. The occurrence of the changes is evident; their value to the patient requires careful consideration. The ease of use of the hypodermic needle which makes possible the parenteral introduction of proteins into the body has led to widespread and often uncritical use of this method in the treatment of all manner of conditions, and to the drawing of clinical conclusions often without consideration of the natural history of the diseases treated.

Clinical as well as laboratory opinions concerning the method of action and ultimate results to the patient of the parenteral injection of foreign protein differ widely. Some clinicians use protein shock therapy extensively and believe it to be useful; others are firmly convinced of its uselessness or that the dangers outweigh the possible benefits to be obtained. There may be some gain in considering the arguments, and perhaps a better appreciation of what is required in the formulation of clinical opinion as to the value of a remedy may be secured.

In the study and attempted therapy of infectious disease of the past forty years, chief emphasis has been on the specific relationship between the cause of the disease and its proposed remedy. The early success of diphtheria antitoxin, and the conceptions of most workers, influenced greatly by the teachings of Ehrlich, tended to direct therapeutic efforts along specific lines, and when treatment by antiserums or vaccines was attempted, the causative organism of the disease was used. When specific vaccines failed to yield the results expected, it was thought that perhaps by using a vaccine prepared from the identical organism causing the disease in the patient (autogenous) better results might be obtained.

From 1906, the date of Wright's introduction of vaccine treatment, the number of papers on vaccines in medical journals constantly increased until it reached a formidable volume about 1912. From that time on, interest in this form of treatment has declined, and the number of papers on vaccine therapy recorded by the *Index Medicus* steadily shrank until by 1923 they formed but a small part of the articles listed. In 1923 Dr. Hektoen and I [1] undertook by questionnaire to ascertain the opinion of practicing physicians with respect to the use of vaccines. We received replies from 1,519 physicians, the groups including members of the special societies of the Congress of American Physicians and Surgeons, physicians in the larger cities of Michigan, physicians of Indianapolis, and physicians of New York and Brooklyn. The replies from each of the four groups were in substantial agreement and indicated that the use of vaccines of various sorts had decreased from a widespread use in the years centering around 1912 to a relatively small percentage in 1923. Excluding hearsay reports, we obtained records of 140 instances of harmful results, including a number of cases in which death was considered to have been caused by the use of vaccines subcutaneously injected. Seventeen cases of asthma were reported to have followed courses of bacterial vaccines, administered to patients who previously were not known to have suffered from asthma.

The verdict of these 1,500 jurors, selected alphabetically and only on the basis of their willingness to serve, indicated that the great expectations of the period from 1906 to 1912 for the general usefulness of vaccines had not been fulfilled, as shown by the fact that in all but five of sixty-three different disease conditions for which vaccines had been recommended, the percentage of physicians not using or no longer using them was nearer 100 than 90 per cent.

The span of the rise and fall of the popularity of vaccines was about fifteen years. About the time when vaccine therapy in general had passed the peak of its popularity, attention was directed to some of the reactions that occur in the animal body following the parenteral introduction of foreign protein whether of bacterial or other origin. While nonspecific protein therapy has come into prominence in the past ten years, it has been used in some form or other for many decades. In the same number of the *Deutsche medizinische Wochenschrift* in which in 1893 Fränkel reported on the specific treatment of typhoid with subcutaneous injections of typhoid vaccine, Rumpf described the treatment of typhoid with pyocyaneus vaccine, on the theory that such nonspecific injections could activate dormant and possibly specific powers of resistance. A partial list of measures and substances used to influence the course of infections in a more or

* Read before the New York Academy of Medicine, Oct. 30, 1930.

1. Hektoen, Ludvig; and Irons, E. E.: Vaccine Therapy, J. A. M. A. **92**: 864 (March 10) 1929.

less nonspecific manner includes fixation abscesses, setons, blisters, serums of man, horse, sheep, goat and chickens, antiyeast serum of Deutschmann, egg albumin, milk, proteose and other split protein products, tissue extracts and autolysates, leukocytic extracts, vaccines, bacterial toxins and autolysates and Coley's fluid. At present, milk or its products, and typhoid vaccine seem to be most popular.

THE REACTION

Following the intravenous injection of a foreign protein, there occur rises in temperature and pulse rate, chill, sweating, decrease and later increase in circulating leukocytes. The intramuscular injection of proteins, such as milk, is followed by slight rise in temperature and leukocytosis. Reactions following injections of milk have been credited to the bacterial content of the milk by several investigators.

In patients who had fever previous to the injection, as in typhoid or pneumonia, the temperature may fall subsequent to the reaction, and in rare instances the fever may not recur. After the reaction there may be noted decrease of pain and swelling in joints in arthritis or other clinical changes interpreted as an amelioration of the illness for which the injection was given.

Various theories have been advanced to explain the mechanism of the reaction, such as the mobilization of ferments (Jobling and Petersen), the increase in resistance associated with leukocytosis, or the stimulation of antibody production by previously sensitized cells. In animals previously stimulated to antibody formation, the injection of nonspecific protein sometimes causes a reappearance or increase in specific antibodies such as precipitins (Obermayer and Pick, Hektoen). While there is evidence in support of each of these theories, a complete explanation of the effects of the reaction has not been furnished by the laboratory. Stanley Davidson,[2] studying the effects in rabbits of intravenous injections of nuclein, which produce reactions resembling protein reactions, obtained leukopenia followed by leukocytosis but could not demonstrate therapeutic value as judged by protection tests, using antipneumococcus serum, or by antibody production using agglutination of *Bacillus typhosus*. Other mechanisms suggested to explain observed effects of the injections include the production of vasodilatation and, in the case of ulcer of the stomach, of the inhibition of peristalsis.

THE CLINICAL USE OF PROTEIN

Even a brief survey of the literature of nonspecific protein therapy will reveal an amazing list of different diseases and conditions in which this method has been used and has been more or less enthusiastically recommended. Included in the list are acute and chronic arthritis, pneumonia, typhoid, sepsis, erysipelas, gonorrheal infections, peptic ulcer, bacillary dysentery, encephalitis, dementia paralytica, dermatologic conditions, diseases of the eye, especially iritis, thromboangiitis obliterans, arteriosclerotic gangrene, Raynaud's disease and nephritis. The length of the list does not make a favorable impression on a follower of Ehrlich. It is reminiscent of the still longer lists of commercial vaccine makers of some years ago and suggests that the clinician is already feeling the lack of laboratory control and guidance which, when available, is so steadying and helpful. The list also suggests a departure from the original theory of nonspecific stimulation of resistance to infection as defined by Rumpf in the treatment of typhoid, to include conceptions not strictly immunologic but rather physiologic, such as vasodilatation and the inhibition of peristalsis. To accept this evidence *en masse* without submitting each element to a critical survey in relation to other known facts in immunology, physiology or clinical medicine would be as unscientific and unfruitful as to deny the occurrence, in certain cases, of the subsidence of fever, the reduction of edema in acute arthritis, or the clinical improvement in dementia paralytica which sometimes follow the use of foreign proteins.

In some instances of reported therapeutic results, clinical claims have been advanced far beyond laboratory and controlled experimental evidence, and here clinical evidence must stand or fall on its own merits. The empiric method has many triumphs to its credit, but for one triumph there have been countless defeats. Safety, as well as progress, demands that clinical observations be controlled as completely as are laboratory experiments. The fact that the attainment of satisfactory controls in clinical medicine is always difficult and sometimes impossible does not relieve the observer from his obligation to scientific accuracy.

HURRIED PUBLICATION

The literature on the use of foreign protein in shock therapy as listed in the *Cumulative Index* increased from four articles in 1916 to sixty-three, the high point, in 1922, with a gradual decrease to twenty in 1928. The curve resembles that of vaccine literature which began ten years earlier. Some of these articles are carefully written; others seem hurried and not well thought out and are admittedly "preliminary reports" in which the writer is cautious in his opening paragraph, braver as he marshals his evidence, and absolutely convinced in his conclusion. May I quote two consecutive sentences which I have paraphrased slightly from an article on nonspecific protein therapy: "We recognize that because of the small number of cases (some forty dealing with five diseases) and the short interval since treatment, no definite conclusion can be drawn from results obtained. Our purpose in reporting this series of cases is to point out the usefulness, ease of administration, and applicability of nonspecific therapy in several types of disease." In view of the situation described in the first sentence it is difficult to see how the purpose avowed in the second sentence could be attained except perhaps in the demonstration of the "ease of administration."

Other articles give the impression that, if they had been laid away six months, they might not have been published or the conclusions might have been modified.

CLINICAL OBSERVATIONS

That the intravenous injection of foreign protein produces profound changes in the body is shown both by laboratory tests and by clinical observation. The question to be answered is not whether such changes occur but whether they are of advantage to the patient and if so whether the advantage gained offsets any possible disadvantages. It must also be determined whether such improvement as is noted is actually due to the remedy or whether, in the disease in question, similar improvement may occur spontaneously.

Recently a young man was admitted to my hospital service seriously ill with a severe lymphangitis of the arm, which was greatly swollen from wrist to shoulder. He had been sick for two days and on admission his

2. Davidson, Stanley: Tr. Med. Chir. Soc. Edinburgh, 1926-1927, p. 21.

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temperature was 103 F. The next morning he was much improved, his temperature was lower, and on the third day of treatment the swelling had entirely subsided and the temperature was normal. The treatment consisted of hot moist dressings only; but had vaccines or foreign protein injections or antiserums been used, his case might have appeared near the top of the list of brilliant and convincing results.

There are numerous instances in clinical medicine of the favorable effect, as to the patient, of one infection on another disease, as illustrated by the decrease in size or even disappearance of malignant lymphoma following an attack of erysipelas. There is much in common between such an event and the result of injection of foreign protein.

FAVORABLE RESULTS

The cutaneous lesions of syphilis are reported to have been favorably influenced by parenteral treatment by milk and by typhoid vaccine, and in some instances complete involution of chronic lesions has been brought about. In some cases of syphilis, Wassermann-fast under arsphenamine treatment, the use of foreign protein injections is reported to have been followed by negative Wassermann reactions subsequent to further arsphenamine treatment. These results have been interpreted as evidence of nonspecific stimulation of latent forces of resistance in the body.

In dementia paralytica the favorable course with long remissions, following the production of chills by malarial infection or by intravenous injections of typhoid vaccine, are well known and seem to indicate that this method of treatment is useful. By some the fever and by others nonspecific stimulation have been credited with the good effects of the treatment. Hanschell [3] records an interesting case of granuloma pudendi in which the ulceration steadily extended from the genitals over the pubes in spite of various therapeutic measures, including injections of antimony and potassium tartrate. Intravenous injections of typhoid vaccine, producing shock reactions, were now combined with further injections of antimony in 5 per cent dextrose solution and healing followed. A similar result has been reported by Ormsby in malignant syphilis of the face.

Large spored ringworm infections are reported to have been successfully treated by intravenous injection of typhoid vaccine.[4]

In certain inflammations of the eye, especially in iritis, improvement, sometimes remarkable in its suddenness, with reduction of congestion and pain, have been observed following injections of foreign protein. It is of interest to note that occasionally similar sudden improvement has been seen on the removal of peridental abscesses or after tonsillectomy in iritis. The similarity suggests that the reaction excited by the operation in the surrounding tissues with possible temporary bacteremia is in effect analogous to that following foreign protein.

In arthritis, especially acute arthritis and acute exacerbations of some forms of chronic arthritis, clinical improvement with reduction of pain and swelling is reported after foreign protein therapy.

These few examples indicate that clinical effects often apparently favorable to the patient follow injections of foreign protein.

3. Hanschell, H. M.: Tr. Roy. Soc. Trop. Med. & Hyg. **22**: 891, 1929.

4. Engman, M. F.: Large Spored Ringworm Infection: Treatment with Foreign Protein Injections, Arch. Dermat. & Syph. **13**: 352 (March) 1926.

DANGERS

Protein shock therapy is, however, not without its dangers, although it is but fair to say that, in view of the large numbers of patients treated in this manner, the incidence of fatal accident, at least of those reported, is relatively small. Some years ago I [5] reported three cases of fatal outcome, including one case of gonococcal arthritis and one of typhoid. While I did not see the patients, I had access to the histories and to the postmortem reports. Punctate cerebral hemorrhages in one, and thrombosis, including thrombosis of the renal artery in another, were found. Hench of Rochester has recently reported several fatal results in patients under treatment for arthritis. Arterial thrombosis was found in some.

While even the more severe reactions following intravenous injections of foreign proteins usually pass without sequelae, it sometimes happens that a new and more inconvenient condition is substituted for the original disability, as in the instance cited by Russell of Edinburgh: "It may interest you if I tell you of a lady who was subject to attacks of bronchitic asthma from time to time. Years ago she was given what I presume was really protein shock. At one time the injection of horse serum was used as a remedy for asthma, and in the locality where this lady lived several people had been benefited by the injection of what I take to have been horse serum. The lady submitted to this treatment, with the result that she nearly died of protein shock; and further, it had this interesting effect upon her, that ever afterward the smell of a horse gave her asthma. Before that time she had ridden a great deal and was quite a skilful horsewoman."

MODIFIED VIEWS OF SPECIFICITY

Just how the effects that follow injections of foreign protein are produced is not known. One or several factors, including mobilization of ferments, stimulation of antibodies and leukocytes, or the inauguration of chemical changes in the amorphous or intercellular tissues and fluids, which affect favorably the lesion in the patient, may be responsible. Observations in this field as well as in the field of what had been supposed to be strictly specific therapy indicate that a somewhat broader view of immunologic reactions than has heretofore been required must be taken.

One is impelled toward this more liberal view by the newer conceptions of the mechanism of action of therapeutic agents which until recently have been regarded as perfect examples of the principle of strict specificity and were in some cases developed by reason of such theory. Investigations indicate, for example, that the actions of quinine in malaria, of emetine in infestation with *Ameba histolytica*, and even of arsphenamine and mercury in syphilis, are probably not, as was formerly thought, dependent on the direct effect of the remedy on the invading organism, but indirect through the interaction of other substances in the body of the host.

The increasing divergence of clinical opinion as to the ultimate effects of treatment, as the number of factors of etiology increases, is well illustrated in arthritis and requires a careful consideration of the natural history of disease.

THE NATURAL HISTORY OF DISEASE

Preliminary to drawing conclusions as to the effectiveness of a remedy, it is obviously necessary to know what is likely to be the course of the disease in

5. Irons, E. E.: Tr. A. Am. Physicians, 1917, p. 91.

untreated cases. If a hypothetical disease is considered in which the outcome is known to be uniformly fatal, and by a new method of treatment even one or two recoveries in proved cases can be obtained, it may at once be reasonably concluded that the remedy has value.

If a disease is treated whose case fatality is known from years of clinical observation to be 50 per cent, and in a controlled series of cases of sufficient number, a case fatality of 25 per cent should be obtained by the treatment, again it may be concluded that the remedy has clinical value.

The number of observations here necessary to safe conclusions will be much larger, and to satisfy the mathematically minded will probably equal the number of controls that would be required approximately to establish the previously known case fatality rate. Antimeningococcic serum in epidemic cerebrospinal meningitis might be thought of as falling in this category.

As the difference between results in treated and untreated cases grows less, i. e., the effectiveness of the remedy in modifying the outcome less marked, the formulation of clinical opinion becomes more difficult, the required numbers of observations and controls greatly increased, and comparison by statistical methods more complicated.

Then, too, the case fatality in age groups, and in epidemics in different years and different localities, varies greatly. Diphtheria and scarlet fever are examples. The effectiveness of a remedy is also dependent on the day of the disease when treatment is begun, as is well shown in the treatment of diphtheria by antidiphtheric serum.

Thus, in studying statistically the effects of treatment of a disease with reference to case fatality only in which but two outcomes, recovery or death, are considered, it is at once necessary to subdivide the cases into groups corresponding to those observed in the untreated disease, and a statistical study which at first seemed simple becomes increasingly complex as the number of factors, such as age, time of treatment or epidemic severity, increases.

In a disease such as arthritis in which there are substituted for the clear-cut alternatives of survival or death such outcomes as relative decrease in disability, relief complete or relative of pain, or decrease swelling and tenderness, the difficulties of the physician in forming a clinical judgment are increased by the introduction of relative for absolute values, and by the new element of subjective symptoms of the patient whose statements of what he feels and can do are greatly influenced by his state of mind, whether of hope or of discouragement.

The natural history of arthritis presents still further obstacles in the way of clinical judgment. Acute arthritis, due to acute or chronic localized infections elsewhere in the body, frequently heals spontaneously. The swelling, pain and disability disappear and in a few days the joint may function as well as before. In some cases, treatment with foreign protein is said to hasten the return to normal, but whether so treated or not there may be recurrences of the arthritis in the same or other joints. The clinical question here is whether the benefit of hastened cure, by a few days in some instances, is offset by the failures and possible attendant dangers of the treatment in the others.

The evaluation of the results in relief of pain, disability and deformity which usually pass under the clinical term chronic arthritis is still more troublesome. There may be present the element of infection, but often the immediate cause of disability is mechanical as in ostearthritis, or in the damage to cartilage of atrophic arthritis, or in referred pain from nerve irritation or pressure.

A man with quiescent and symptomless ostearthritis of the spine may experience pain following an unusually forceful swing of a golf club. The pain and disability are acute, the underlying cause chronic, and the immediate cause mechanical. He will recover in a few days no matter what is done, provided the treatment does not make him worse.

Examples might be multiplied indefinitely of varying combinations of causes leading to pain, disability or deformity, in a group of patients likely to be gathered together in a clinical report of the results of treatment of arthritis. It must be evident that to draw safe conclusions as to the value of treatment, whether by foreign protein or other methods, would require more critical judgment than is usually employed or evident in current clinical reports. Failure to group cases by the use of such imperfect standards as are available, or to submit even approximately comparable control groups, often invalidates such meager conclusions as otherwise might be justified.

Even in the more favorable reports of results of treatment of arthritis and iritis there is now and then a note of caution. One of the foremost proponents of protein shock therapy in arthritis finds "that if no benefit is derived after two or three injections it is not probable that further treatment will be beneficial." This would indicate either that the method works only part of the time or that it is useful only in a selected group of cases. If the latter, then the treatment should be limited to this group, if it can be defined, and a like group of controls furnished.

In discussing the effects of protein therapy in iritis, Benedict and Rucker[6] remark, "Protein therapy is used with good results in some diseases of the eye. The indications for use and choice of the substance to be used are not clearly established. . . . In general, little improvement was noted in cases in which the disease had been active for several months or in which there had been previous attacks. The best results were obtained in the patients seen early in the first attack." Again there is noted a group of favorable cases in which from the natural history of the disease improvement would be most likely to be expected.

Less favorable opinion was expressed by Professor Russell commenting in Edinburgh on Davidson's paper: "For myself personally as a physician, I am so greatly impressed with the subtlety of the chemical changes and the chemical variations that occur in individual human bodies that I am almost prepared to believe anything in the way of therapeutic results. I have had a certain amount of experience along these lines and I am not very fond of protein shock in rheumatoid arthritis. . . . My percentage of benefit and recovery is greater than that recorded by Professor Stockman as obtained from protein shock, and that without protein shock or shock of any kind whatever."

COMMENT

This review of some of the evidence for and against the use of foreign protein in a few of the many conditions in which it has been used is necessarily brief and incomplete. I have tried to present both sides. The

6. Benedict, W. L., and Rucker, G. W.: New Orleans M. & S. J. **81**:782 (May) 1929.

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mechanism of the effects as yet lacks complete explanation as well as control by the laboratory. In several groups of diseases, the evidence of clinical controls sufficient to warrant conclusions as to the effectiveness of the treatment is lacking.

It must also be noted that, in several of the diseases in which clinical effects from injections of foreign protein are supported by good evidence, the treatment is designed for use in combination with other recognized methods rather than to displace them. The clinical effects noted after injections of foreign protein in dementia paralytica and in other manifestations of syphilis would hardly lead to the treatment of all syphilis by this method to the exclusion of mercury and arsphenamine.

In view of the known relation of chronic infections to iritis, the striking clearing of the circumcorneal inflammation following an injection of foreign protein would hardly warrant dependence on this method alone, disregarding other well known methods of examination which may disclose the cause and by its removal prevent recurrence.

In the patient with chronic arthritis there are usually more than one and often several factors contributing to his pain, deformity and disability. The chronic feature of the arthritis may be due to the recurrence of acute exacerbations. Such cases are often associated with chronic local infections and constitute the group of chronic arthritis which affords examples of relief by the eradication of infection.

The arthritis may be of the atrophic type with swelling and later loss of cartilage and atrophy of muscles, or of the hypertrophic type with proliferation of joint margins and but little muscular atrophy. While infection is believed by some to be one of the chief factors responsible for the former of these two, in both groups other factors, including heredity, poor nutrition, metabolic disturbances, impaired local blood supply, and trauma resulting from hard work and from bearing increased weight, to mention but a few, play a large part in the production and progress of joint disease and disability. Pain may result from mechanical causes as in hypertrophic or ostearthritis and may subside spontaneously.

The permanent relief of pain and disability in chronic arthritis whose etiology is varied and whose course is characterized by spontaneous remissions and exacerbations at intervals of months seems unlikely to result from the use of one remedy, such as foreign protein injections or vaccines; and when improvement occurs following treatment, it seems necessary to reserve some credit for other possible factors.

The evident difficulty of supplying a comparable control series does not justify clinical conclusions drawn from uncontrolled observations.

In still other disease groups treated by vaccines or milk injections, one function of the treatment seems to be that of a sort of "occupational therapy" in which patient and physician participate, whiling away the time until the natural forces of healing bring about recovery.

SUMMARY

Striking results, including numerous instances of clinical improvement, have been noted following the use of protein shock therapy. For the most part these have been seen in acute conditions rather than in those of long duration. As a routine and sole method of treatment, the case for protein therapy has not been proved. It is necessary here to distinguish, from this large group, methods of specific immunization and desensitization employed to relieve the symptoms of sensitiveness to specific known proteins such as those of some pollens and foods. Whenever it is proposed to use protein shock therapy, in a special case, due consideration should be given to possible serious and unexpected outcomes. The present wave of popularity of injections of foreign proteins for diseases of all descriptions is likely soon to pass, as have other modes and styles.

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HEPATITIS *

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The surgeon is often called on to wander in the upper abdomen and find the cause of the patient's failure to get well under medical treatment. Not infrequently in this study of the pathology of the living he finds what has been described as hepatitis. While the term "hepatitis" is perhaps not well chosen for certain conditions, for others it describes the state of affairs with considerable exactness. Just what is included under the term hepatitis will be described later. In order to make the finer distinctions in this form of pathologic changes of the liver, it is the custom in our clinic to consult with the staff, particularly with the pathologist, and thus obtain an interpretation of the lesion and its background from the pathologist's point of view. Besides this, the pathologist is often given a sliver of liver removed in taking out the gallbladder, and thus the gross interpretations can be checked up by microscopic study. It goes without saying that not only is a correct interpretation of the pathologic changes obligatory, but it is essential to try to trace the possible origin of the condition. With the abdomen open, this entails a careful survey not only of the liver, the gallbladder, the extrahepatic ducts and their lymph nodes and the nodes in the gastrohepatic omentum, much in evidence in some cases, but also of the duodenum, the stomach, the spleen, the pancreas, the appendix, the large and small intestine, especially the sigmoid, and the pelvic viscera—in short, a complete autopsy in vivo.

The increased attention accorded the subject of hepatitis in recent years is principally due to the desire to prevent biliary cirrhosis, the terminal stage of a chronically infected liver. I have been much interested in this condition for some time and have stressed its importance in various articles and addresses.

As in all subjects of discussion, increased and careful observations uncover more and more instructive examples, and thus, as experience piles up, add more details and greater clarity to the picture.

The first point to consider is the etiology of this form of hepatitis. It is frequently associated with gallbladder disease, not only qualitatively but often also quantitatively. The quantitative aspect, however, has two phases: the duration of the infection and its severity. It is not uncommon in chronic disease of the gallbladder of long standing to find fairly extensive changes in the liver. On the other hand, in cases of shorter duration the changes may be confined to an area in the immediate neighborhood of the gallbladder. How are these brought about?

I have frequently spoken of gallbladder infection, its manner of occurrence, the difficulty of eradicating it,

* Read before the College of Physicians, Philadelphia, Oct. 1, 1930.

its persistence and its chronicity. I have also repeatedly called attention to the relation of the appendix to gallbladder infection and have emphasized the rôle of the appendix in the pathogenesis of hepatic infection.

This subject of hepatic infection is not a new one. As far back as the nineties the great pathologist Adami in sections of liver found organisms within its substance, to which he gave the name "subinfection," which condition is now called "focal infection." It is well known what an ideal location the appendix is for lingering infection because of its narrow lumen, the difficulty with which it empties and its rich lymphatic supply. Its venous system, being that of the portal vein, adds to the relationship in providing a path for organisms to reach the liver. I am not the only one who feels that an abdominal operation, especially one for chronic infection, is incomplete without the removal of this pernicious source of infection, the appendix.

Now that surgeons in their autopsies in vivo have demonstrated the close association of cholecystic disease and changes in the liver, the experimental work of the research laboratories has added materially to the understanding of how this infection is carried. In the first place, it has been shown over and over again that streptococci, once in the walls of the gallbladder, are likely to persist there for an indefinite period. In the second place, even with infection in the walls of the gallbladder, the lumen of the organ is not necessarily infected. Examination of the gallbladder shows that it is an extremely vascular organ and one with an abundant lymph supply. As I have previously stated in dealing with the subject of the gallbladder itself, the lymphatics of the wall of the organ communicate with those within the liver. Years ago, pathologic reports on bits of liver tissue excised during cholecystectomy showed that when the gallbladder was diseased the liver was never free from changes, varying from cloudy swelling and fatty degeneration to fibrosis of the portal spaces and to actual chronic inflammatory proliferation and exudation. The work of Graham has demonstrated this direct connection experimentally, while Wilkie's researches emphasize the connection, adding the possibility of still another route of infection. It is quite probable that interstitial infection of the gallbladder and the consequent fibrosis and hardening cause at least some obstruction, if not complete blockage of the lymphatic communications between this organ and the liver itself. After separating the gallbladder from its bed, Wilkie found that the intravenous injection of streptococci was followed by cholecystitis and that, when the gallbladder was allowed to remain in its normal situation, similar intravenous injections produced infection of the liver. The trauma of this experiment probably precludes the drawing of conclusions as to normal physiology, but it decidedly imitates the pathologic separation of the gallbladder from the liver as it occurs in long continued fibrosing inflammations. Picture, then, this chain of events: The gallbladder is infected, perhaps by way of the appendix, and the walls of the gallbladder become a convenient nesting place for organisms active and inactive. They enter the liver. When active, they spread rapidly; when quiescent, small amounts of connective tissue are constantly being laid down to wall them off. The part of the liver adjacent to the gallbladder, now being infected by very reason of its anatomy, allows the spread of the organisms throughout its entire structure, for the capsule of Glisson sends prolongations and divides the organ into lobules so that there is a direct communication by way of the lymphatics from one end of the liver to the other. The infected liver then excretes infected bile, which in turn leads to cholangeitis and cholecystitis. At the same time, organisms occasionally may enter the blood stream, and when injected into the veins may reach the gallbladder to damage it still further and thus again round the vicious circle. Naturally, the whole body shares in the toxemia. As concrete examples of this, culture studies in our own clinic give the results presented in the accompanying table.

The gallbladder, its contents and the lymph node at the root of the cystic duct have been studied in relation to the organisms present. Naturally, it is recognized that the mere presence of organisms does not mean infection; the lymph nodes or the tissues may be perfectly capable of destroying them without undue harm to themselves. Nevertheless, under ideal conditions it is probable that no organisms at all will be present; but no one can predict what they may do in the future if they are present and persist, or are continually being brought to the liver.

To return to the subject, a common finding is a thick, heavy liver with the anterior edge rounded, the capsule

Bacteriologic Observations in Two Hundred Gallbladders

Pathologic Observations	Number	Positive		Streptococcus Anhemolyticus per Cent	B. Coli per Cent	Staphylococcus Albus per Cent
		Number	Per Cent			
1. Acute suppurative and ulcerative	10	6	60	50	17	33
2. Chronic interstitial and catarrhal	86	42	48	43	28	28
3. Chronic suppurative and ulcerative	7	3	42	67	33	
4. Minor lesions, chronic atrophic	97	29	29	31	7	62
Total	200	80	40	42	16	35
Hilus lymph nodes	200	72	36	41	18	40
Calculi in gallbladders	66	38	57	39	26	28
Bile in gallbladders	200	39	19	41	36	22

tense, the parenchyma swollen and somewhat fragile. The color varies from a yellowish brown to a dark reddish brown or a bluish brown. Strictly speaking, this is not hepatitis but a cloudy swelling and congestion. When the gallbladder is thickened, cloudy and opaque, and has lost its normal tonus and elasticity, more especially when the lymph nodes in the neighborhood are enlarged, the gallbladder should be removed, for it is infected and some change in the liver is to be expected. Cloudy swelling and congestion are recoverable lesions. This is especially true of the liver, which has a large power of regeneration, and the removal of the gallbladder, the most important link in the vicious circle of infection (naturally the appendix also), brings happy results. With reasonable aftercare as to exercise and diet, a complete recovery is assured in practically all cases. The more acute the infection, the more advanced will be this particular change, until the actual spread of organisms causes adhesions to the omentum and to the abdominal walls. In long continued cases of milder degree, adhesions are fibrous from the beginning and may finally involve also the hepatic flexure, the duodenum and the stomach. This large, thick, heavy liver, therefore, is found more often when the gallbladder alone is infected than when the common duct also is involved, in which condition the lesion in the liver is apt to be more advanced.

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Real hepatitis in the pathologic sense, that is, inflammation of the liver with exudation, occurs in a localized and in a generalized form.

As stated, acute inflammation in the gallbladder or anywhere alse produces a cloudy swelling and other degenerative changes. But in the special case of the gallbladder there are added the insults of close anatomic proximity through lymphatic and physiologic contact through the bile. Thus, one sees more or less exudation of serum, fibrin and polymorphonuclear leukocytes in and around the gallbladder bed radiating into the liver. If of sufficient duration, the infection travels from this region over a large area of the liver. Gaining access to the bile, both upward from the gallbladder and downward from the liver itself, the infection then travels up and down the ducts to all parts of the liver and finally produces a suppurative cholangeitis with multiple abscesses and almost certain death. But these cases, important though they are, seldom cause argument, for their treatment is definitely surgical, their course is definitely acute, and the symptoms are definitely diagnostic. Their prevention, however, is another matter. Broadly speaking, it is the subject of this paper.

Two other classes of cholecystitis must be dealt with more fully because, after all, such acute, fulminating gallbladder suppuration is uncommon compared to the chronic infection and the chronic infection with subacute exacerbation. In chronic cholecystitis the changes in the liver, when localized, show superficially infiltrated opaque areas around the gallbladder bed with opaque lines radiating in various directions, together with slight enlargement of the liver as a whole; or there may be a small superficially infiltrated opaque patch on the anterior surface of the right lobe of the liver immediately overlying the gallbladder, the liver being otherwise normal. This progresses to opacity, involving practically all the anterior surface of the right and to some extent also the left lobe. The infiltration into the substance of the liver is manifested by the firmness to touch elicited by bimanual palpation. The spleen may or may not be enlarged. Finally, there is a small, contracted, firm liver, its anterior border being wedge-shaped; its edges thin, opaque and contracted. The spleen in such cases is firm and enlarged and on microscopic examination is fibrotic.

A variation of probably another stage is a large liver extending down to or near the crest of the ilium with an irregular nodular surface, the elevations to superficial examination being not unlike cysts, and yet of the same consistency as the liver. Microscopically these nodular areas are usually areas of regeneration. I have never seen this type of liver without involvement of either the common or the hepatic duct.

Since it is the lymphatic and the biliary systems that are involved in this type of liver, fluid in the abdomen does not occur; nor is jaundice common except in the case of the nodular liver just described.

As the lesion progresses, then, one may find with increasing frequency pathologic changes in the common and hepatic ducts, duodenal or gastric ulcer, and chronic or subacute pancreatitis, usually of the head of the organ. Naturally the appendix and the gallbladder are both diseased. I cannot help regarding the appendix as the most common site of intra-abdominal infection from which these troubles may arise. The teeth and tonsils play a small rôle in this state of affairs. On the other hand, the colon may be of importance—not so important as the appendix, but nevertheless a factor at times in the production of hepatitis. The question whether these types of hepatitis are due entirely to biliary tract infection is most pertinent. The answer is that biliary tract infection does produce these types of hepatitis. It is possible that other causes, probably metabolic in nature, are occasionally forerunners of a biliary cirrhosis, but I venture to say that, even when begun by metabolic faults, the altered physiology would certainly be conducive to and favor infection.

Is the infection more often lymph-borne than blood-borne? This question is difficult to decide, but from the foregoing it would seem that, at least in the beginning, the lymph channels are more important routes than is the blood stream.

All of these forms of hepatitis are the forerunners of biliary cirrhosis. That seems clear. By biliary cirrhosis is meant, naturally, not the hypertrophic biliary cirrhosis of Hanot but the fibrosing process beginning in and spreading from the ducts.

In the last stages of biliary cirrhosis, which are seldom seen by the surgeon, not only because the condition is too late for surgical help but also because it is regarded as strictly medical, ascites is uncommon. Such patients travel straight downhill from chronic toxemia, both from the infection and from the loss of liver function.

SUMMARY

Acute and chronic attacks, and chronic with recurrent acute or subacute attacks of infectious activity in the gallbladder region are forerunners of hepatitis, varying from purely degenerative changes to a mildly acute suppurative inflammation, to chronic fibrosing, specific tissue-destroying processes leading to early death from sepsis or to late death from toxemia and loss of liver function, preceded by prolonged invalidism.

Now, as far as treatment of hepatitis is concerned, it is both operative and nonoperative. It is quite obvious that operative treatment may be preventive or curative. To be preventive, it must be instituted early before the infection has traveled on its devious roads. This means that removal of the gallbladder alone ordinarily suffices. But when the infection has reached the liver, cholecystectomy is not sufficient. Nothing short of removal of the gallbladder together with T-tube drainage of the common duct will answer. If the latter is carried out comparatively early, it may still be preventive and head off a peripancreatic lymphadenitis as well as other sequelae. If common duct drainage is not instituted until late, it may have to be continued for months.

But what about the questions left unanswered or answered with hesitation? There is nothing to say but that a question unanswered should be a stimulus to a hunt for its solution, usually to be found in clinical and laboratory study; for few can be answered in the clinic alone, and not so many in the laboratory alone. Unfortunately, the work done in the laboratories of most hospitals is simply routine, and hunters are few. It goes without saying that routine work must be done, and must be done quickly and accurately; but what is needed in most laboratories is the little bit more which attempts to answer unsolved problems. There is no escape from the conclusion that an operating room suite is incomplete without a laboratory equipped to do research work. Philanthropists must be educated to the point that they never endow an operating room alone but complete the gift by adding an experimental laboratory with funds for its upkeep.

1830 De Lancey Place.

ARTERIOVENOUS ANASTOMOSIS

FOLLOW-UP AFTER EIGHTEEN YEARS OF "SUCCESSFUL REVERSAL OF THE CIRCULATION IN ALL FOUR EXTREMITIES OF THE SAME INDIVIDUAL"

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Early in 1913 I [1] reported a case wherein an arteriovenous anastomosis—so-called reversal of the circulation—had been done in all four extremities for the relief of real and threatened gangrene consequent on Raynaud's disease. This was in the days when the Carrel method of suturing blood vessels had become available to clinical uses and when so much was expected of it. The case was that of a young woman under the care of Dr. Joseph C. Bloodgood, who not only assisted at one of the operations but graciously consented to the report after all the work had been completed. Dr. Bloodgood has the patient in his wards at the St. Agnes Hospital once again and has kindly permitted me to study her and make the present follow-up report.

In brief, the woman, Mrs. G., was 26 years of age when in February, 1911, an arteriovenous anastomosis of the femoral artery and vein was done in the left leg in the hope that the gangrenous process then affecting two toes would be stopped and that the pain associated with it would be alleviated. Certain successful cases treated in this manner had already been reported in the literature, so there was ample precedent for the attempt made. The result was so satisfactory that when the patient's right foot became similarly affected in May of the same year an arteriovenous anastomosis was done between the femoral vessels of this leg and again there was a successful issue.

In fact, so successful were the operations in the legs that when, a year later, the patient's hands became involved she herself asked that the procedure be used in her arms. Arteriovenous anastomosis was therefore done between the brachial vessels of the left arm, Jan. 23, 1912, and between those of the right arm, March 5. In each case the operation was successful; in each case the gangrene stopped and the pain decreased.

In the years that followed, the patient was seen and examined from time to time. All four anastomoses were found to be functioning, as evidenced by the thrill at the various operation sites and up and down the members, and the patient seemed to be doing well as far as further gangrene was concerned. She still complained of some pain and continued the habit of taking morphine, which she had had prior to the time I first saw her. That was really the only untoward feature. But even so, she got along pretty well and was able to earn her own living.

Thus conditions remained—with the patient averaging 3 grains (0.2 Gm.) of morphine a day—until about one year ago, when the pain increased and gangrene of one or two of the remaining toes on each foot occurred, coupled with gangrene of the ring finger of the right hand. Just why or how this misfortune should have arisen it has been impossible to determine. The patient is now about 45 and in excellent health generally and this in spite of the fact that she is now consuming 8 grains (0.5 Gm.) of morphine by hypodermic daily.

It has been many years now since I have done an arteriovenous anastomosis for gangrene of the extremities. Always a difficult, trying and dangerous operation, its field was extremely limited not only because so many of the patients were too far advanced in years to permit of any prolonged operation but also because their blood vessels were so uniformly thickened, unpliable and partially if not totally thrombosed. More conservative methods came into use and of these the present day periarterial sympathectomy of Leriche seemed to offer so much more than arterovenous anastomosis that the latter operation has practically been discarded.

If, however, one reviews the subject of this report with a critical eye, one cannot help but be struck with the fact that here is a woman who went sixteen years without further gangrene and during this time lived in comparative health and comfort. Whether this was the result of the operation or in spite of it is an open question. It may be that the disease process became latent—only to come to life again in recent times—but the fact that the patient always had some pain would seem to indicate that such was not the case and that the increased blood supply did have some beneficial effect. One wonders whether such a long span of circulatory compensation could have resulted from any other measure that may have been invoked, and may it not be that a procedure that has much to offer in certain selected cases is being overlooked?

Present Status of Patient

	Date of Operation	Type of Operation	Present Status
Left leg	February, 1911	End to end with one-inch vein transplant	No thrill felt or heard at site of operation or further down the leg; femoral artery pulsates normally above site of operation but no arterial pulsation is felt below, either at knee or in foot; probabilities are that thrombosis has occurred at site of the vein transplantation; no marked varicosities; two remaining toes ulcerated; no ulcers on foot or leg
Right leg	May, 1911	Lateral anastomosis between artery and vein with ligation of vein proximal to site of the anastomasis	No thrill felt or heard at site of operation or anywhere else in leg; normal arterial pulsations in leg and foot; probabilities are that a thrombus has occurred at site of the blood vessel union closing off the stoma, but in doing so it did not affect the normal arterial flow; no marked varicosities; two remaining toes ulcerated; no ulcers on foot or leg
Left arm	January, 1912	Lateral anastomosis with vein ligation proximal to site of union	Thrill at site of blood vessel union and all the way down the arm to the hand; thrill is also transmitted up into vessels of the neck on the right side; normal pulsation in all arteries of the arm; veins also pulsate; marked varicosities in veins of upper arm; no aneurysmal dilatation at site of blood vessel union or anywhere else; no swelling or edema of the arm or hand; no gangrene of the remaining fingers, of which there are three besides the thumb
Right arm	March, 1912	Lateral anastomosis with vein ligated proximal to site of union	Exactly same as in other arm

A special note on the heart, March 29, 1930, was made by Dr. J. T. O'Mara: There were no abnormal pulsations or heave. Palpation did not reveal any thrills. The point of maximum intensity was in the

1. Bernheim, B. M.: Arteriovenous Anastomosis: Successful Reversal of the Circulation in All Four Extremities of the Same Individual, J. A. M. A. **60**: 360 (Feb. 1) 1913.

fifth interspace, within the nipple line. On auscultation, the sounds were regular and slow, with a systolic murmur heard best over the pulmonic area. The second aortic and second pulmonic sounds were slightly accentuated. There was no pulsation of the vessels of the neck. The systolic blood pressure was 100. The venous hum was so constant and powerful in the arms that the diastolic pressure could not be obtained. Efforts to obtain it in the legs were also unavailing.

I think that this heart condition is most remarkable. It is true that the veins were ligated proximal to the site of anastomosis in every instance in order to prevent backflow, but there are marked varicosities in the arms now and many of them must return arterial blood back to the heart. After sixteen years it would seem only natural to suppose that there should be considerable enlargement of the heart, especially to the right. Furthermore, our ideas with regard to arteriovenous aneurysm would point to this eventuality. That it has not happened, that the patient has no signs or symptoms referable to a possible heart condition after all these years, indicates at least that the operation is not a harmful procedure—as had been suggested.

The greatest interest, though, attaches to the anastomoses and in this connection it is to be noted that the case was a very early one of typical Raynaud's disease in which all main blood channels were functioning normally. There were the usual spasmodic effects in the terminal vessels with such color changes as are seen in Raynaud's disease and with gangrene, threatened and real, of the digits—and, of course, pain. In attempting to do the operation in the left leg, which was the first arteriovenous anastomosis I had ever approached, it was my intention to do a crisscross affair as suggested by Carrel; that is, cut the artery and vein in two at the same level and then unite the proximal artery to the distal vein and the distal artery to the proximal vein, in this way making a complete reversal of the circulation.

It was with real consternation that I noted, after severing the two vessels, the great retraction that took place, because I could see that it would be utterly impossible to do the operation as planned. As a matter of fact, the ends of the artery and of the vein could not be brought together at all, and it was on this account that a venous transplant was done in this limb. One inch of the proximal end of the femoral vein was removed and spliced between the proximal end of the artery and the distal end of the femoral vein. The proximal vein and distal artery were then ligated. The operation took quite some time, of course, but the sutures held, and a great success was had. A thrill was felt and heard later on, and for several years this state of affairs persisted, and the patient had no further gangrene. Just how long it lasted it is impossible to say, because the patient was lost track of until quite recent times.

It was on account of the difficulties encountered in doing this first operation that I used the method of lateral vascular anastomosis which I devised in collaboration with Dr. Harvey B. Stone [2] in 1911, when it came to operation on this patient's right leg. I had felt all along that it was unwise to destroy an arterial circulation that was normal and was of the opinion that the lateral anastomosis was less dangerous in that if a thrombus occurred only the stoma would be closed and the artery would carry its blood as usual as was the case in the dog. That this turned out to be true is evidenced by the fact that in the left leg a thrombus occurred which completely occluded the vessel to such an extent that no pulsation whatever is to be obtained in this limb, while in the right leg, in spite of the fact that the anastomotic opening seems to be closed, the normal arterial pulsation is to be found even down into the foot.

With the success that was had by the lateral anastomosis method it was only natural that this method should be employed when it came to operation on the patient's arms. It is gratifying to know, besides being of extreme interest, that these openings have persisted throughout all these years. It is further to be noted that the patient has had much less gangrene in the hands than she has had in the feet, so that it is fair to suppose that the persistence of the anastomotic openings has accomplished some real good.

Just what will be the final outcome of this case it is impossible to say, but the patient was addicted to morphine before ever she came under my care and it was never possible to break her of the habit. Where she formerly took 3 grains she now takes upward of 8 grains a day, and it is fair to assume that she will go on to the usual end of individuals who are so afflicted. It is on account of this morphine, of course, that one is unable to evaluate the pain and discomfort she is having. As regards her general physical condition, it is quite satisfactory in every respect other than that she now has some trouble with the remaining toes on both feet.

The case is most extraordinary in many respects. One cannot help feeling that perhaps arteriovenous anastomosis deserves further consideration with regard to the treatment of certain vascular disorders.

1814 Eutaw Place.

2. Bernheim, B. M., and Stone, H. B.: Lateral Vascular Anastomosis, Ann. Surg. **54**: 496 (Oct.) 1911.

BLOOD DONORS

A STUDY OF THE EFFECT IN DONORS OF REPEATED BLOOD LOSS *

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The effect of loss of blood in donors has not received the careful attention that the subject warrants. Most of the studies [1] have been limited to notations concerning health, the necessity of repeated Wassermann tests and the careful matching of blood. It is reported that in one institution a student is permitted to donate blood only once in a semester. This rule was made because one of the students fell seriously ill following a blood donation. McNamara [2] has stated that he does not make routine Wassermann tests on his donors, as most of those available had syphilis and in his experience the disease was not transmitted if present in the tertiary stage. Giffin and Haines,[3] from a study of donors made at indefinite intervals after blood donation, concluded that bloodletting every four or five weeks was not harmful; that women developed anemia more

* Read before the College of Physicians, Philadelphia, Jan. 4, 1929.
* From the departments of medicine and of therapeutics, Jefferson Medical College Hospital.

1. Mandelstamm, Alexander: Deutsche med. Wchnschr. **51**: 1157 (July 10) 1925. Schumacher, B.: Arch. f. Gynäk. **123**: 569 (March) 1925. Greenwood, H. H.: Lancet **2**: 585, 1923. Keynes, G.: Brit. M. J. **2**: 613 (Oct. 4) 1923.

2. McNamara, W. L.: Am. J. Syph. **9**: 470 (July) 1925.

3. Giffin, H. Z., and Haines, S. F.: A Review of a Group of Professional Donors, J. A. M. A. **81**: 532 (Aug. 18) 1923.

rapidly and recovered more slowly than men; that 27 per cent felt improved in health; that 50 per cent gained weight, and that studies of blood volume showed no change in plasma and cell volume.

In this report a detailed study of the effect of blood-letting on 50 donors in 175 transfusions is presented. Hemoglobin, red cells, white cells, blood plates, clotting time, volume index, vital capacity and weight are estimated before and after each transfusion. An attempt to show the effect of loss of blood in successive donations is made and the time elapsing before the blood returns to normal is included. The number, the interval between donations and the time elapsing since the first donation are indicated also.

Only five of the donors are females. The youngest male is aged 12 and the oldest is aged 41. They are grouped according to age in table 1.

TABLE 1.—*Age and Sex of Donors*

Age	Number of Males	Number of Females	Age	Number of Males	Number of Females
12.....	1	..	29.....	0	..
21.....	3	..	30.....	1	..
22.....	3	..	31.....	1	..
23.....	7	..	32.....	1	1
24.....	7	..	34.....	3	1
25.....	3	1	35.....	2	1
26.....	6	..	37.....	1	..
27.....	2	..	41.....	2	1
28.....	3	..			

All but three of the donors have given blood more than once. The greatest number of donations given by one donor was fifty-four. In table 2 the donors are grouped under the number of donations given. Whenever possible, studies were made in successive transfusions so that the effect of repeated loss of blood might be more closely observed. The average reduction of hemoglobin in males was 4 per cent and of red blood cells 300,000 whenever approximately 400 cc. was given. With the use of this amount the greatest reduction of hemoglobin was 8 per cent (from 78 to 70 per cent) and of red blood cells 720,000 (from 5,520,000 to 4,800,000). One donor showed a reduction of hemoglobin from 98 to 76 per cent and red blood cells from 5,400,000 to 3,980,000 when 1,200 cc. was given in fourteen hours. Donor 6 made six donations (1,800 cc.) in twenty-three days. The hemoglobin dropped from 95 per cent to 79 per cent and red blood cells from 5,000,000 to 3,650,000, but in five days the hemoglobin was 90 per cent and red blood cells 4,520,000. Donor 29 possessed marked regenerative powers. He made five donations (2,000 cc.) in eighteen days with a reduction in hemoglobin from 98 per cent to 83 per cent and of red blood cells from 5,240,000 to 4,500,000. In ten days the hemoglobin was 105 per cent and the red blood cells 6,240,000. Another transfusion of 400 cc. reduced the hemoglobin to 100 per cent and red blood cells to 5,800,000. Donor 10 also demonstrated unusual ability to regenerate during the course of a series of transfusions. He made three donations (1,200 cc.) in ten days. The hemoglobin was 98 per cent, red blood cells 5,400,000 before and 93 per cent hemoglobin and 5,430,000 red blood cells after the last donation, which was his nineteenth in seventeen months.

TABLE 2.—*Number of Donations from Each Donor*

Number of Donations	Male Donors	Female Donors	Number of Donations	Male Donors	Female Donors
1.....	3	..	12.....	..	..
2.....	1	..	13.....	1	..
3.....	1	..	14.....	1	..
4.....	4	2	15.....	1	..
5.....	1	1	16.....	1	..
6.....	2	1	18.....	1	..
7.....	1	..	24.....	1	..
8.....	2	1	25.....	1	..
9.....	2	..	28.....	1	..
10.....	3	..	32.....	1	..
11.....	1	..	54.....	1	..

EXAMINATION OF DONORS

Clotting Time.—This was estimated before and after each donation. The alteration was slight. There seemed to be some tendency to lengthening after several donations in succession were made. This change, however, was so slight that the estimation was omitted in many of the studies.

Volume Index.—The estimation of volume index (Haden) did not prove to be of any significance. The changes were slight and indefinite.

Blood Plates.—These were counted before and after each transfusion. Definite conclusions could not be drawn from the results.

Vital Capacity.—The variation in vital capacity before and after donation was not marked. At times the total expired volume was increased and at other times decreased. Many of the donors showed a decided increase after making several donations. It was not evident whether this was due to increased capacity or to greater skill of operation. The greatest increase was 250 cc. In each donor an increase was associated with increase in weight.

Change in Weight.—Whenever from 300 to 400 cc. of blood was donated there was a loss in weight of from one-half to 1 pound (from 225 to 450 Gm.). One donation of 800 cc. resulted in a loss of 1½ pounds (0.7 Kg.). All male donors except two who made more than one donation gained weight. One lost 1½ pounds (680 Gm.) and the other showed no change. The gain in weight varied from 1 to 13 pounds (0.5 to 6 Kg.). The 13 pound gain was in donor 24 and took place over a period of two years.

MALE AND FEMALE DONORS

Giffin and Haines stated that female donors developed anemia more quickly and recovered more slowly than male donors. In the present report, studies of only five female donors are included. We have avoided using female donors, as their veins are usually small or obscured by superficial fat. We agree with Giffin and Haines that in most females with a donation of from 400 to 500 cc. an anemia quickly results and the return to normal is slow. Donor 17 demonstrated this point. Her hemoglobin changed from 96 to 68 per cent and red blood cells from 4,780,000 to 3,600,000 after four donations in sixteen days (1,560 cc.). But donors 47 and 48 gave four transfusions each in a period of thirty days with but little more reduction than would have occurred in the male. They gave, however, approximately 300 cc. at each transfusion. One of the five donors, donor 28, was a robust, florid woman who donated seven times in thirty-five days (2,740 cc.). The hemoglobin was 80 per cent and red blood cells 4,220,000 after the last donation. Two of the five female donors gained in weight.

SMALL VS. LARGE DONATIONS

The question of small or large donations is important. Giffin and Haines stated that 500 cc. may be

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given with safety every four to five weeks. In the foregoing paragraph the effect of repeated donations of small amounts of blood were mentioned. Donors have been used at intervals of from three to five days six and seven times without being seriously affected either symptomatically or systemically. However, whenever larger amounts of blood were given, considerable effect was noted. One donor not included in this report gave 380 cc. with a drop in hemoglobin from 95 to 92 per cent and in red blood cells from 5,000,000 to 4,640,000. Two days later, at another institution, he gave what he thought was 500 cc. but felt so weak after the donation that he was unable to walk home. The following day his hemoglobin was 60 per cent, red blood cells numbered 3,200,000, and he was 4 pounds (1.8 Kg.) lighter than before the first donation. It was discovered that 1,000 cc. of blood had been withdrawn. A month later the hemoglobin was 86 per cent and red blood cells 4,470,000. Other donors have reported similar experiences. Our donors who knowingly have given large amounts of blood have been unfavorably affected by the loss. Donor 44 gave 1,000 cc. in eight hours (two donations). His hemoglobin dropped to 70 per cent and the red blood cells to 3,700,000. He remained in the hospital for one night. Following this, for several days he complained of lack of energy and sleeplessness. Five weeks later the hemoglobin was 88 per cent and the red blood cells numbered 4,520,000. Donor 32 gave 1,200 cc. in fourteen hours with a resultant drop of hemoglobin to 76 per cent and red blood cells to 3,980,000. Donor 50 gave 800 cc. (two donations) in one and a half hours. The hemoglobin dropped to 76 per cent and red blood cells to 3,800,000. Twelve days later the hemoglobin was 82 per cent and red blood cells 4,860,000. Twenty-five days later the hemoglobin was 90 per cent and red blood cells 4,960,000. Donor 35 made three donations in eight days (1,620 cc.) with a drop of hemoglobin to 74 per cent and of red blood cells to 3,560,000, and twenty days later the hemoglobin was 88 per cent and the red blood cells numbered 4,600,000. It is evident that the return to normal in most cases is slow when large donations are given at one time, and that when 400 cc. or less is donated the return is usually fairly rapid.

EFFECT ON FEMALE DONORS

Donor 47 made four donations of 1,460 cc. in four weeks. The hemoglobin fell to 70 per cent and red blood cells to 3,800,000. Fifteen days later the hemoglobin was 82 per cent and the red blood cells had increased to 4,470,000. Donor 51 made six donations in twelve weeks (2,600 cc.) with a resultant drop in hemoglobin to 50 per cent and in red blood cells to 2,980,000, and thirty days later the hemoglobin was 52 per cent and the red blood cells numbered 3,240,000.

In our experience and from a study of these results, the ideal amount for donation by males is 400 cc. or less and by females 300 cc. Most male donors cannot give blood in amounts greater than 500 cc. at frequent intervals and many female donors stand the loss of 400 cc. or more very badly. We feel that whenever possible male donors should be used. If a female donor is to be used for several transfusions, the amount taken should be approximately 300 cc., emergencies excepted. A robust female donor may occasionally be found who is able to give blood in 400 cc. amounts at frequent intervals without developing anemia.

VARIATION IN DONORS

It must be recognized that the tall, robust donor is able to withstand loss of blood better than one of short stature and little weight. We know that a patient of small stature does not require as much blood to produce a given result as does one of large stature. The weight of the donors is shown in table 3. Thirty weighed more than 160 pounds (72.6 Kg.).

The blood of some donors produced a more favorable result both objectively and subjectively than that of others. Donors 2 and 9 were of this type, while donor 36, although well built and healthy, often failed to bring about an average change. This might have been explained by the variation in the condition of the patient, but when similar results were noted in several patients it became more than coincidence. It has been our observation that a fat donor does not stand loss of blood as well as the robust, wiry type.

TABLE 3.—*Weight of Donors*

Weight in Pounds	Number of Males	Number of Females	Weight in Pounds	Number of Males	Number of Females
90-100.....	1	..	160-170.....	8	..
120-130.....	4	2	170-180.....	3	1
130-140.....	2	..	180-190.....	5	1
140-150.....	6	..	190-200.....	6	..
150-160.....	5	1	200-210.....	5	..

We feel that when 400 cc. of blood is to be used, the best type of donor is a male between 20 and 40 years of age, weighing 150 pounds (68 Kg.) or more, and of erect, compact stature.

GENERAL CONSIDERATIONS

One of us (H. W. J.) has been able to observe the reactions to loss of blood in some 500 donors in more than 4,000 transfusions. Usually the donor rises from the table and goes back to work or to the classroom none the worse for the experience. The majority have felt improved by the bleeding. The skin seems clearer and several individuals with acne have reported the disappearance of the lesions, although they were of long standing. Not a few, who were chronically constipated, noted the return of normal intestinal function. Most of them stated that they were more able and eager to attend to their usual duties. Whenever the donation has been more than 600 cc. the donor is made to remain in the hospital and fluid is forced. It is then recommended that he eat a diet rich in meat and green vegetables for the following week. One donor, six hours after giving 400 cc. of blood, had a severe chill of twenty minutes' duration followed by a rise in temperature to 104 F. The next morning the temperature was normal. He presented symptoms of a common "cold." The nasal and pharyngeal mucous membranes were injected. In three days he felt perfectly well. As a probable explanation for this reaction it is suggested that he was developing the "cold" before the transfusion and that the loss of blood in itself did not bring about the reaction. Six donors, not medical students, making their first donation, fainted while in a recumbent position. The blood pressure dropped so rapidly, in one from 120 systolic and 70 diastolic to 72/20 and in another from 126/68 to 64/0, that the lowering of the pressure made it impossible to get blood from the veins and the transfusions were discontinued.

Most of our donors are students. We pay them $25 for ward patients and from $35 to $50 for private patients for donations of from 200 to 500 cc. Ten dollars is added for each hundred cubic centimeters in excess of 500 cc. given. In this manner many of the students have aided in paying their way through college. Donors are obtained also through the medium of radio and newspaper advertisement. A Wassermann test is performed on the blood of all new donors and every three months on those known to us.

SUMMARY

1. In studying the effect on donors of bloodletting in 175 transfusions, hemoglobin, red cells, white cells, blood plates, clotting time, volume index, vital capacity and weight were estimated before and after each transfusion.

2. Studies were made in successive transfusions. The average reduction of hemoglobin in males was 4 per cent and of red cells 300,000 whenever approximately 400 cc. was given.

3. The results of the estimation of clotting time, volume index, blood plates and vital capacity were indefinite and did not afford material from which conclusions could be drawn.

4. The average immediate loss of weight resulting from the donation of approximately 400 cc. was from one-half to 1 pound.

5. All male donors except two gained from 1 to 13 pounds.

6. Female donors were not as satisfactory as male donors. Whenever from 400 to 500 cc. was donated, an anemia developed more quickly in females than in males and the return to normal was delayed.

7. We suggest that 300 cc. be the amount for donation by females if several donations are contemplated except in emergency cases.

8. If but 400 cc. or less is donated, male donors may be used four or five times at intervals of from three to five days without ill result to them.

9. If more than 500 cc. is donated, the interval between donations should be lengthened and the number lessened, for we found that whenever amounts of more than 500 cc. were given at short intervals the donors noted marked systemic and symptomatic effects.

10. Thirty of the fifty donors weighed more than 160 pounds.

11. The tall, wiry, robust donor between the ages of 20 and 40 stood loss of blood better than one of short stature or one tall but fat.

12. It was noted that the blood of some donors seemed to produce more favorable results than that of others.

13. Some 350 donors have been observed. When approximately 400 cc. of blood was donated, an unfavorable result was not noted.

14. Six "lay" donors fainted on the table from psychic shock and the transfusions were discontinued because the blood flowed so slowly.

15. Donors are paid from $25 to $50 for donations of from 200 to 500 cc. of blood.

16. Wassermann tests are made before transfusion and at intervals of three months.

17. Many donors noted improvement in general health. Acne and constipation were favorably influenced. There was an increase in weight in the majority, and many noted a greater ease in performing their routine duties.

1930 Chestnut Street.

RINGWORM OF THE FEET

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Ringworm of the feet is a fungus (mold or vegetable organism) infection usually found between the toes or about the nails. It is technically called epidermomycosis, epidermophytosis or trichophyton interdigitale. It is also known as toe itch, toe scald, fungus foot or athletic foot. Hongkong foot and Shanghai foot are none other than the ringworm of the feet found in this country.

Ringworm infection was first discovered by Hebra, in 1860, as eczema marginatum. It was later discovered to be of mycotic origin by Kolobler, Pick and Kaposa. In 1907, Sabouraud isolated and described the fungus *Epidermophyton inguinale*. During the World War, ringworm was found to be the most common skin disease. The United States Public Health Service reported that one half of all adults have this disease at some time and that in the Gulf States almost the entire population is affected. Nine tenths of the habitués of gymnasiums have this skin condition. Most people attending gymnasiums or pools at golf clubs, fraternal organizations, public bath houses, military organizations, hotels, schools—in fact, anywhere where the feet are exposed—are found to have this ringworm. Ruggles [1] of Rochester, N. Y., taking thirty-four cases at random at the Rochester Y. M. C. A., found every one to be infected.

Ringworm of the feet is world wide and age old. At the University of California, where there are students from countries all over the globe, it was found [2] that the majority of entrants have the foot infection. These students come with it from China, Japan and other remote parts. At this university, 85 per cent of the students taking athletics have it. The more the feet are liable to exposure, the more prevalent the condition. The infection is less prevalent in the elementary schools, more prevalent in the high schools and most prevalent in the colleges. A survey of thirty-five universities disclosed between 50 and 90 per cent of the students to be involved. All statistics show definite variation in the proportion of males and females involved. Various colleges show from 50 to 90 per cent of the boys affected and from 15 to 40 per cent of the girls. Among the reasons mentioned as to why girls are less affected is that their gymnasiums are better equipped. Boys' gymnasiums more frequently have wooden floors, and the equipment is not so elaborate or quite as sanitary as the girls'. The girls, too, never go barefoot, have less occasion to perspire, keep better personal hygiene and wear lighter, ventilated shoes, which they change oftener.

Various types of molds cause ringworm, the principal species of which is *Trichophyton interdigitale*. One frequently hears of ringworm or tinea of the nails or tinea unguium complicating tinea pedis. As a matter of fact, in any form of ringworm of the feet the organisms are found not only about the toes but usually also about the nails, and it is frequently very difficult to subdivide the conditions.

Nail clippings in from 15 to 30 per cent sodium hydroxide microscopically show chains of sporelike elements, or skeins like a tangled mass of thread. As

1. Ruggles, E. W.: Some Phases of Epidermophytosis, New York State J. Med. **29**: 740 (June 15) 1929.
2. Legge, R. T.: Ringworm of the Feet, J. A. M. A. **92**: 1507 (May 4) 1929.

far as the organism is concerned it is in reality a ringless ringworm. In cultures the organisms grow abundantly. The fungi grow readily on silk, cotton, woolen and leather footwear; also on gloves, trusses and athletic wear. They are found on wooden floors, runways, benches, diving boards, and also on rubber and canvas mats.[3] Common dressing rooms, towels and soaps are frequent causes of infection. Between the toes, warmth and moisture provide a condition ideal for propagation. Boiling readily kills the spores.

There are several varieties of ringworm of the feet. First is the carrier type, in which there are no symptoms. As with the carriers of any contagious disease, the danger is that the carrier may at some time acutely affect himself or others. There is the desquamating type, in which there may be a slight superficial peeling of the skin between the toes or about the nails. This is the commonest type. The desquamation may become heaped up and boggy, presenting the sodden variety. There is the vesicular type, in which small and large water-like blisters are found. In the eczematous type there are inflammation and discharge. Cracking of the skin and fissure formation are commonly found in any of the types. Fluid and scabs are seen more in the vesicular and eczematous types. It is rarer to find pus. The chief site of the infection is between the toes, especially in the third and fourth interdigital spaces, frequently involving the nails. Itching, burning, pains and other various paresthesiae are the rule. From 1 to 3 per cent of cases of ringworm of the feet are of the more severe type so as to be disabling.

When the nails are affected they become friable, and about the free border are heaped up masses of adherent detritus. The nail becomes yellow and overgrown. It may present transverse ridges or longitudinal striae. The nail infection may be superficial with just the edge involved. It may cause separation of the nail from its bed. Thickening of the cuticle is also to be found. Infection of the nails is common, is stubborn, tends to recur, and frequently persists unnoticed long after the associated skin condition has cleared.[4] The infection may last from several weeks to many years. It may be realized how stubborn this disease is when dermatologists frequently cannot cure themselves. As with any infection, there may be a secondary invader. In this case the picture is distorted, depending on the type of the secondary infection.

The matter of prevention has been quite problematic. As the disease is communicable, it would be ideal not to expose the feet at any time to the infection. The condition, of course, is too universal for this. The organisms seem to be everywhere. Rubber, wooden and paper bathing slippers are used. However, as at the showers, slippers are removed to wash the feet. The technic is thereby broken and the exposed feet are on the floor again to come in contact with the fungi. When many are using showers at the same time, especially children, it can readily be seen how easily the slippers themselves would become sources of infection or reinfection. There should be no exchange of towels, suits or soap. Rarely may the ringworm be spread to other parts of the body, such as the hands, axillae and groins. The spread of the infection is usually from the feet to these other parts of the body; therefore, it is best to use the towel last on the feet. As boiling destroys the ringworm, it is advisable to boil such articles as hose, towels and bathing suits.

Reinfection is the great difficulty to overcome. If the organisms are destroyed on the feet, reinfection may readily come from footwear, floors or members of the family. It seems that the ideal means would be some chemical that would be destructive to the ringworm organism that could be applied to all places with which the exposed feet come in contact. Footwear should be light, well ventilated and changed frequently, preferably night and morning. Antiseptic powders could be lightly applied between the toes and in the footwear. The floors of natatoriums should not be made of wood. They should be made of some nonabsorbent, easily cleanable substance.

There is apparently no specific medicament for this condition. The remedies tried have been numerous. Nearly every antiseptic has been used at some time or other. Among substances used have been 2 per cent acetic acid, 1:2,000 potassium permanganate, iodine, mercurochrome-220 soluble, camphor and iodine, Whitfield's ointment, Pick's ointment, pine and tar ointment, chrysarobin, zinc sulphate, 2 per cent gentian violet, moderate carbolfuchsin and burnt elm. Various powders, such as thymol iodide, have been placed in shoes. Floors have been rubbed with formaldehyde. The nails have been scraped. X-rays have been applied to the lesions.

During the routine examination of the Albany Junior High School pupils in the spring of 1928 it was found that hundreds of children had this ringworm infection of the feet. Ninety-seven per cent of the cases found were of the mild desquamating type while the remaining 3 per cent embraced the sodden, vesicular and eczematous varieties. These students were excluded from participating in gymnastics and prevented from entering the pool. Swabbing with iodine and mercurochrome-220 soluble was done in most cases. This, however, did not serve to check the condition, and the physical training classes were much depleted. In the fall of 1929 it was found that the same condition existed, and about 50 per cent of all the pupils were excluded because of this foot condition. Early in November, 1929, foot baths containing from 10 to 15 per cent sodium thiosulphate were installed between the locker and the shower rooms. Each pupil on leaving the shower was requested to immerse the feet in this chemical bath on the way to the locker. In so doing, the solution was well spattered over the locker room floor so that from the time the pupil left the shower until the time of dressing, the feet were constantly in contact with this thiosulphate solution. The sulphite solution was found efficient as low as 3 per cent, so that starting with from 10 to 15 per cent, plenty of allowance is made for the dripping into the bath of plain water. The bath was changed after each class of from thirty to fifty pupils. The sulphite solution is ideal in being colorless and practically odorless. Four weeks after the thiosulphate baths were installed, the ringworm infection had entirely disappeared from the Junior High School.

The importance of the footbath cannot be overemphasized. There is no question that if the foot was not entirely immersed in the sulphite solution the results would not be so successful, because all the parts of harboring the organisms would not be reached. Swabbing is usually done on the more apparent areas and not the more obscure, where the tinea may be just as

3. Public Health Engineering Section of the American Public Health Association, Oct. 2, 1929.

4. Williams, C. W., and Barthel, E. A.: Tinea of the Toe-Nails as a Source of Reinfection in Tinea of the Feet, J. A. M. A. **93**:907 (Sept. 21) 1929.

plentiful as a constant source of reinfection. It undoubtedly is frequently not so much the medicament that fails as it is the mode of its application. The bath is unhandy at times, however, and a 20 per cent powder of sodium thiosulphate in boric acid has been tried with much success on feet, footwear and floors. The powder is more easily applicable and as with the bath may readily be placed on the entire foot, especially between the toes, about the nails and beneath the soles. It is quickly applied to the sock and inside the shoe. A light dusting is all that is necessary. It has been found ideal at times to step into the bath and later use the powder locally. The powder may regularly be dusted on the feet and footwear night and morning for prevention and comfort.

349 State Street.

Special Article

THE INDISPENSABLE USES OF NARCOTICS IN THE PRACTICE OF OTOLARYNGOLOGY*

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Narcotics employed for various purposes in otolaryngology are, first, morphine and codeine derived from opium; second, cocaine from erythroxylon coca, and, last, scopolamine. The manufacture of heroin from morphine was discontinued some years ago because of the habit forming tendencies displayed by individuals using that drug. It was most valuable in controlling annoying and persistent coughs, particularly those of tracheal and bronchial origin. So far as the indispensable character of the opium preparations is concerned, I do not find it necessary to use morphine very extensively. With reference to tonsillectomy under general anesthesia in adults, the hypodermic use of ⅙ grain (11 mg.) of morphine sulphate with 1/150 grain (0.4 mg.) of atropine is of value in that the former lessens the excitement and fright stage before anesthesia is established and the latter diminishes the secretions in the mouth and throat. When children are of an especially excitable type, it is occasionally best to give a hypodermic injection of ⅙ grain (11 mg.) of codeine prior to such operation as mastoidectomy. As a general rule, however, it does not seem necessary to me to use any preoperative medication for children.

When extensive intranasal work or, especially, when radical external sinus operations are performed under local anesthesia, in many instances, particularly in excitable individuals, it is necessary to use some preoperative medication, usually in the form of ⅙ to ¼ grain (11 to 16 mg.) of morphine sulphate, sometimes combined with 1/200 to 1/150 grain (0.3 to 0.4 mg.) of scopolamine hydrobromide. Preliminary to mastoid operations, particularly in adults, it has been found desirable to use from ⅙ to ¼ grain (11 to 16 mg.) of morphine sulphate hypodermically before operation. With the exception of unusually painful cases of acute otitis media I rarely resort to morphine medication, but I do employ it where there are very severe postoperative pains following mastoid operations, such as headache or other symptoms arising from meningeal irritations.

Besides rest and certain local measures, morphine has been used for many years in cases of severe hemorrhage from the nose, throat, larynx and lungs. In these cases, especially when great restlessness is evident, the employment of morphine at times seems indispensable.

Local anesthesia, in my opinion, is most desirable wherever it can be used and is popular with many operators, particularly for tonsillectomy, intranasal procedures and intralaryngeal operations, such as removal of papillomas, and for laryngofissure. Preliminary to the latter operation, the use of a small amount of morphine is often desirable or even essential. Some authors are opposed to giving an opiate before a laryngeal operation.

In the work of bronchoscopy there is some divergence of opinions regarding the use of narcotics. Chevalier Jackson does not favor either morphine or cocaine; in fact, he does not use any form of anesthesia when working on children. Some operators for bronchoscopic and foreign body manipulations on adults under general anesthesia give morphine as preliminary medication when the patient is unmanageable, and likewise use the same procedure in children. For local anesthesia, most often in adults, cocaine is applied to the pharynx, pyriform fossae and larynx before attempting to pass the tube. Then cocaine solution is applied either with applicators or with an atomizer to the lower portion of the trachea and the bronchi.

Cocaine has made intranasal surgery possible, and many operators also have used it in throat operations; but many alarming symptoms, and in a number of instances actual death, have resulted from its use. The Section on Laryngology, Otology and Rhinology of the American Medical Association in 1919 authorized the appointment of a committee to study the results and to report on the advantages and disadvantages of local anesthesia. Dr. Emil Mayer of New York, the late Dr. Ross Hall Skillern of Philadelphia and I constituted this committee, and Dr. William B. Chamberlain of Cleveland was added a year later. The committee was able to report twenty-two additional deaths among cases in which operations under cocaine anesthesia had been performed.

For further investigation, a committee was later appointed consisting of representatives from the various branches of medicine and surgery. Finally a permanent committee for the study of toxic effects of local anesthesia was formed under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association. This committee consists of Dr. Emil Mayer of New York, chairman, Dr. Elliott C. Cutler of Cleveland, Dr. Robert A. Hatcher of New York, and the author as secretary. Its efforts are directed toward obtaining all possible details regarding deaths in operative work done under cocaine or other local anesthetics. Not only convulsions and other alarming symptoms are sometimes noticed with the use of cocaine in nose and throat operations, but quite a considerable number of deaths have occurred, of which the committee

* These articles are prepared under a plan of cooperation between the American Medical Association, the Committee on Drug Addiction of the Division of Medical Sciences of the National Research Council, and the Division of Mental Hygiene of the United States Public Health Service. Their object is to reduce the legitimate use of addiction drugs to a minimum by replacement, wherever possible, with other remedies that will accomplish the desired result. The physicians of the United States are the essential group in any such attempt and it is hoped that these articles will be useful to them in their practice. The funds for this work have been donated to the National Research Council by the Bureau of Social Hygiene, Inc.

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listed forty-three. The data obtained have been published for the benefit of the profession. Since no names either of patients or of operators are mentioned, there is no good reason for any one refusing to report unfortunate results to the committee. It is important to remember that not a few patients have an idiosyncrasy and show toxic symptoms with even a small amount of cocaine.

Whenever possible the substitution of some of the newer local anesthetics, such as procaine hydrochloride, is advisable, in order to avoid possible toxic effects from the cocaine. In spite of the fact that in one of the largest clinics in the country the use of small amounts of cocaine submucously has not been attended by any serious results, I firmly believe that cocaine should never be injected subcutaneously or submucously. In operations on the throat, especially in tonsillectomies, it is possible to get perfect anesthesia without employing any cocaine whatever, except in the rare instances to be mentioned, and I have done work in this way for many years. Using a 1 per cent procaine hydrochloride solution with or without the addition of a small amount of epinephrine and blocking the posterior palatine and the glossopharyngeal nerves gives perfect anesthesia without any untoward effects. When the pharyngeal reflex is active, it may occasionally be necessary to swab the pharynx and the base of the tongue with a 5 or 10 per cent solution of cocaine hydrochloride, care being taken that none of this is swallowed. Cocaine is necessary in intralaryngeal work under local anesthesia, but it is a fortunate fact that when applied here fewer toxic effects are noted. In performing tracheotomy, if a few drops of dilute cocaine solution are instilled into the trachea by inserting the needle between the rings, cough and dyspnea are avoided when the trachea is opened. This is due perhaps to less rapid absorption by way of the laryngeal mucosa than is the case with the nasal and pharyngeal mucous membranes. In the nose it is necessary to use cocaine in septal resections, turbinectomies and operative work on the accessory sinuses. Attention has been called to the fact (Ross) that the combination of cocaine and epinephrine acts synergistically and gives greater rise in the intracranial intravenous pressure than when these two drugs are used separately. For this reason it is better in intranasal work to apply epinephrine, wait five or six minutes until this maximum effect has disappeared, and then use the cocaine.

As general sedatives, the barbital derivatives or bromides may be used with considerable effect, and the former when given before the operation are said to lessen the toxic effects of cocaine anesthesia.

SUMMARY

In considering the need for narcotics in otolaryngology, one may perhaps separate the cases into two groups: those in which their use is really indispensable, and those in which the administration of narcotics is highly desirable but not indispensable; in other words, there are absolute and relative indications. With reference to the conditions in which narcotics are indispensable, there are, first of all, intranasal work, intralaryngeal manipulations and operations under local anesthesia, all of which require cocaine; but great care must be observed in its use. For bronchoscopy it is essential when a local anesthesia is desirable, but some operators consider it not only needless but harmful when doing this work in children. In many cases, because of its toxicity, a substitute for cocaine is employed, such as procaine hydrochloride, butyn, and similar preparations; this is especially true of tonsillectomy and other throat operations.

In the second group, morphine and scopolamine are very desirable as preoperative measures in cases such as mastoiditis, radical nasal accessory sinus operations or extensive laryngeal operation such as laryngofissure or laryngectomy. They are, however, not entirely indispensable because other sedatives, such as the barbital derivatives or bromides, may be used in their place.

180 North Michigan Avenue.

The Chemical Laboratory

THE FOLLOWING CONTAINS A REPORT OF THE AMERICAN MEDICAL ASSOCIATION CHEMICAL LABORATORY, SUPPLEMENTED BY TWO BACTERIOLOGIC INVESTIGATIONS; THE LATTER INVESTIGATIONS WERE CARRIED ON INDEPENDENTLY AT TWO OTHER LABORATORIES.

P. N. LEECH, Director.

LISTERINE

Report of Chemical and Bacteriologic Investigations

Today the name of Lister signifies to most people the generic handle of a proprietary mouth wash and dandruff "preventive," Listerine (Lambert Pharmacal Company). Lord Joseph Lister was the father of antiseptic and aseptic surgery. What an abasement of a great name!

Previous to the creation of the Council on Pharmacy and Chemistry, Listerine was promoted with pseudoscience to the medical profession. During the past twenty-five years it has become increasingly unusual to find advertisements for Listerine in the pages of medical journals. Newspapers, of course, general magazines and a few dental journals accept the copy. In England, proprietary products may still gain caste through the uncritical endorsements of certain journals, notably the *Lancet*. In the issue of the *Lancet* for Sept. 21, 1929, under the heading "Reports and Analytical Records" appeared an article entitled "The Germicidal Action of Listerine Antiseptic." The conclusions drawn by the *Lancet* were:

"1. The statement of the manufacturers [of Listerine] in regard to the killing times of various organisms is substantially correct.

"2. The actual number of micro-organisms killed in 15 seconds by the undiluted antiseptic exceeds that claimed by the manufacturers; over 600 millions were found to be killed in the 15 seconds time limit compared with the 200 millions mentioned by the makers.

"3. The antiseptic has been proved to be perfectly safe for use in all the body cavities."

Whether or not Listerine was a comparatively strong or weak antiseptic; whether or not it possessed any bactericidal power on dilution; and whether or not a preparation of simple chemicals of known composition would be better — on these questions the *Lancet* report was silent.

Not long after the *Lancet* issued its report, American Physicians received in the mail reprints featuring the display statement, "NO GREATER ENDORSEMENT HAS EVER BEEN GIVEN ANY ANTISEPTIC FOR ORAL HYGIENE." Apparently the scientific judgment of the editor of the *Lancet* does not apply to matters affecting the business office.

The circularization of the American Medical profession with the *Lancet* reports brought numerous inquiries to the various departments of the American Medical Association. "How," asked American physicians, "is the *Lancet* able to deduce such sweeping conclusions for an antiseptic which is rated as an inefficient germicide by the intelligent American physician?" The correspondents questioned the slogan carried in newspapers to the effect that Listerine

KILLS 200,000,000 GERMS IN 15 SECONDS.

True, Listerine is advertised with a formula — a formula, however, so essentially meaningless that a druggist could not take the formula and make a duplicate solution from it. Listerine is therefore essentially secret in character.

The Laboratory of the American Medical Association was asked to investigate the present-day preparation from both a chemical and a bacteriologic standpoint. The chemical work was done by J. B. Peterson, Ph.D., of the staff of the American Medical Association Chemical Laboratory.

CHEMIST'S REPORT

JOEL B. PETERSON, PH.D.

Eight original bottles of Listerine (Lambert Pharmacal Company, St. Louis) were bought on the open market and submitted to examination. The printed matter on the outside of the cartons indicated that the product contained 25 per cent alcohol. The following "formula" was found on the carton:

"Constituents:—Thyme, eucalyptus, baptisia, gaultheria and mentha, of each one part; boric and benzoic acids, twenty-nine parts; ethyl alcohol, two hundred and fifty parts; water to make one thousand parts."

Each bottle contained 14 ounces of an amber colored liquid, with an aromatic odor. The contents of the bottles were mixed before examination.

The presence of hexylresorcinol was ruled out by a modification of the test of Eliott and Barbour.[1] Quantitative determinations on the chemical and physical properties of Listerine are recorded in the second column of table 1.

TABLE 1.—*Chemical and Physical Determinations*

Content	Listerine	A. M. A. Laboratory Solution
Specific gravity at 25 C.	0.9746	0.9749
Grams of boric acid in 1,000 cc.	23.4	23.3
Per cent alcohol by volume	26.08	26.09
Acid substances extracted from 25 cc. by chloroform in terms of grams of benzoic acid in 1,000 cc.	0.36	0.42
Refractive index at 25 C.	1.3496	1.3464
Surface tension (dynes per centimeter) at 25 C.	37.1	37.0
Turbidity (cooling) test	12 C.-13 C.	12 C.-16 C.

On the basis of the values for alcohol and boric acid, and on the basis of a large number of experiments in blending the volatile oils suggested in the formula reproduced, a solution was made up as in table 2.

TABLE 2.—*Composition of Solution*

Boric acid	23.4	Gm.
Benzoic acid	0.4	Gm.
Alcohol (94%)	280.0	cc.
Menthol	0.375	Gm.
Thymol	0.75	Gm.
Eucalyptol	0.8	cc.
Methyl salicylate	0.1	cc.
Baptisia (Wild Indigo Fluidextract N. F.)	10.0	cc.
Water to make	1,000	cc.

Dissolve the boric acid in about 650 cc. of water. Dissolve the other ingredients in the alcohol, add the aqueous solution to the alcohol solution, and dilute it with water to 1,000 cc. Add 1 Gm. of talc, shake the solution, and allow to stand two hours and filter.

No turbidity was produced on mixing the alcohol and aqueous solutions or on diluting the completed product. Its color, odor and taste markedly resembled Listerine. Quantitative determinations of the chemical and physical properties of this solution, in comparison to those of market specimens of Listerine, are listed in column 2 of table 1, which indicate that the products have essentially the same characteristics.

From the foregoing it may be concluded:

1. That the formula for Listerine as printed on the carton can be considered as no more than a list of constituents, the quantitative feature being essentially meaningless.

2. That the solutions made according to the formula devised by the A. M. A. Chemical Laboratory closely approximated Listerine in chemical attributes.

1. Eliott, D. C., and Barbour, H. G.: Canad. M. A. J. **15**: 787 (Aug.) 1925.

THE BACTERIOLOGY OF LISTERINE

In order to test the bacteriologic report of the *Lancet* (the *Lancet* did not publish a chemical report) and to get scientific evidence of the relative values of the ingredients of Listerine, the following solutions were prepared and given to the bacteriologist for examination:

A. Listerine (market specimen).

C. A solution containing 55.3 cc. of 94 per cent alcohol made up with water to 200 cc.; i. e., 25 per cent solution of alcohol (by volume).

D. Same solution as C but containing in addition 4.6 Gm. of boric acid.

E. A solution made up according to the formula outlined in the chemist's report (table 2).

F. Same solution as C but containing 0.75 per cent of thymol in addition.

As the work by the *Lancet* laboratory was done by the Reddish[2] method, it was deemed advisable to make a comparison. Two separate investigations were authorized: One was done by Dr. Tucker and Mr. Queen of the Department of Hygiene and Bacteriology at the University of Chicago; the second investigation, unknown to the first, was made by Dr. John F. Norton, director of laboratories of the Department of Health, Detroit.

BACTERIOLOGISTS' REPORTS

I. REPORT BY WINSTON H. TUCKER, PH.D., AND GREENVILLE B. QUEEN, B.S.

The Germicidal Power of Listerine and Its Constituents.—This paper reports the results of tests on the germicidal efficiency of five solutions submitted to us from the chemical laboratory of the American Medical Association. One of the solutions was Listerine, while the four remaining were preparations of the constituents of Listerine in various combinations. For purposes of comparison, Liquor Antisepticus N. F., a preparation of Parke, Davis and Company, was added to the series. All tests were carried out in parallel in order to insure comparable results. Each solution was tested in two different ways: first, for germicidal activity at 37 C. on standardized cultures of *B. typhosus* and *S. aureus* as recommended by Reddish[3] for testing antiseptics; second, *B. typhosus* and *S. aureus* phenol coefficients of the solutions were determined at 20 C. by the Reddish[4] method of determining phenol coefficients.

Procedure.—In the first group of tests the solutions were tested full strength and diluted with 1 and 4 parts (final dilution 1:2 and 1:5 of sterile distilled water). The test organisms were a strain of *B. typhosus* which survived 1:90 phenol for five minutes but not for ten minutes, and a strain of *S. aureus* which survived 1:60 phenol for five minutes but not for ten minutes and survived 1:70 phenol for fifteen minutes. The solutions were measured into sterile tubes in 5 cc. quantities. The tubes were warmed to 37 C. and maintained at that temperature throughout the test. To each medication tube was added 0.5 cc. of a twenty-four hour broth culture of the test organism; then at intervals of fifteen, thirty and forty-five seconds and of one, two, three, four and five minutes, subcultures were made in broth suitable for growth of the organisms. Growth in the subcultures was checked after forty-eight hours' incubation at 37 C., and in case of doubtful growth the material was streaked on agar plates for confirmation. The numbers of viable organisms in the cultures was determined by diluting 0.5 cc. of culture in 0.85 per cent sodium chloride solution and pouring plates at 45 C. Duplicate plates were prepared in each case and the colonies were counted after forty-eight hours' incubation at 37 C. The series of solutions was tested five times with both test organisms. Table 3 shows the average results obtained.

In the determination of the phenol coefficients of the solutions, the same test organisms used in the first tests were employed. In this case the solutions and cultures were main-

2. It may be pointed out that the Reddish method was devised by G. F. Reddish at the time he was bacteriologist for the U. S. Department of Agriculture. Since then he has left the government and is now bacteriologist for the Lambert Pharmacal Company, proprietors of Listerine.

3. Editorial, J. Am. Pharm. A. **16**: 501, 1927. Reddish, G. F.: J. Lab. & Clin. Med. **14**: 649 (April) 1929; The Newer Knowledge of Bacteriology and Immunology, 1928, chapter 22, p. 301.

4. Reddish (footnote 3, third reference); Am. J. Pub. Health **17**: 320 (April) 1927.

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tained at 20 C. throughout the tests. The solutions were tested in 5 cc. amounts as in the first case. At intervals of thirty seconds, 0.5 cc. of a twenty-four hour broth culture of the test organism was added to a series of ten medication tubes containing the solutions in suitable dilutions. After five, ten

TABLE 3.—*Minimum Killing Time of Solutions Up To Five Minutes*

Solutions Tested	Test Organism	Dilutions of Solutions: F. S.	1:2	1:5	Viable Organisms in 0.5 Cc. of Culture
Sol. A	B. typhosus	Killed 15 sec.	Killed 15 sec.	Not killed 5 min.	350 millions
Liq. Ant.	B. typhosus	Killed 15 sec.	Killed 15 sec.	Not killed 5 min.	
Sol. C	B. typhosus	Killed 1 min.	Not killed 5 min.	Not killed 5 min.	
Sol. D	B. typhosus	Killed 1 min.	Not killed 5 min.	Not killed 5 min.	
Sol. E	B. typhosus	Killed 15 sec.	Killed 15 sec.	Not killed 5 min.	
Sol. F	B. typhosus	Killed 15 sec.	Killed 1 min.	Not killed 5 min.	
Sol. A	S. aureus	Killed 30 sec.	Not killed 5 min.	Not killed 5 min.	550 millions
Liq. Ant.	S. aureus	Killed 45 sec.	Not killed 5 min.	Not killed 5 min.	
Sol. C	S. aureus	Not killed 5 min.	Not killed 5 min.	Not killed 5 min.	
Sol. D	S. aureus	Not killed 5 min.	Not killed 5 min.	Not killed 5 min.	
Sol. E	S. aureus	Killed 30 sec.	Not killed 5 min.	Not killed 5 min.	
Sol. F	S. aureus	Killed 5 min.	Not killed 5 min.	Not killed 5 min.	

and fifteen minute intervals of medication, subcultures were made with a 4 mm. platinum loop into seeding tubes of broth. Growth in the subcultures was again checked after forty-eight hours' incubation at 37 C. The coefficients were computed by dividing the dilution that killed the test organism in ten minutes but not in five minutes by the dilution of phenol which gave similar results. Table 4 gives the results that occurred with the greatest

TABLE 4.—*B. Typhosus and S. Aureus Phenol Coefficients of the Solutions Tested*

Test Organisms	Sol. A	Liquor Antisepticus	Sol. C	Sol. D	Sol. E	Sol. F
B. typhosus	0.022	0.022	0	0	0.022	0.022
S. aureus	0.016	0.016	0	0	0.016	0

degree of regularity in ten tests carried out with each solution on both test organisms.

Summary.—The germicidal activity of a series of solutions was tested at 37 C. with *B. typhosus* and *S. aureus* as the test organisms. All of the solutions were germicidal for *B. typhosus* within five minutes when used full strength; when diluted with equal parts of water, solutions C and D lost their germicidal properties, and when diluted with four parts of water, all of the solutions failed to show germicidal properties. When *S. aureus* was used as the test organism, solutions A, E, F and Liquor Antisepticus were germicidal within five minutes, while solutions C and D were not. When diluted with equal parts of water, all of the solutions lost their germicidal powers for *S. aureus*.

Phenol coefficients for *B. typhosus* determined by the Reddish method were the same for solutions A, E, F and Liquor Antisepticus. Coefficients for *S. aureus* were the same for solutions A, E and Liquor Antisepticus, while solutions C and D demonstrated no killing power for either *B. typhosus* or *S. aureus*. Solution F, while germicidal for *B. typhosus*, demonstrated no killing power for *S. aureus* at 20 C. [End of Tucker and Queen's report.]

II. REPORT BY JOHN F. NORTON, PH.D.

In accordance with the request of the director of the American Medical Association Chemical Laboratory, tests on disinfecting action have been made on a group of solutions marked A, C, D, E and F, received from the director of the laboratory. The content of these solutions was unknown to me. In addition, a pint bottle of Listerine was purchased on the open market and a pint bottle of "Liquor Antisepticus N. F.," manufactured by Parke, Davis and Company, was purchased in a similar way. All of the seven products were submitted to the same tests under as nearly identical conditions as is possible in work of this character.

Phenol coefficients for each solution were determined both against *B. typhosus* (Hopkins) and *Staphylococcus aureus*, according to the method recommended and described by Reddish. Table 5 gives the results obtained. The figures are the result of a number of tests. Solutions C and D have no demonstrable disinfecting action against the organisms used. It should be pointed out that, whereas very consistent results are obtained with *B. typhosus*, discrepancies may occur in an individual test, against *Staphylococcus aureus*. This is in accord with the known properties of the latter organism, which has not reached such a stable condition as has the typhoid bacillus. There appears to be no demonstrable difference in the phenol coefficient of Listerine, Liquor Antisepticus, solution A or solution E. Solution F has about half the bacteriologic activity of those just

TABLE 5.—*Phenol Coefficient According to the Reddish Method*

	Listerine*	Liquor Antisepticus	Solutions: A	C	D	E	F
B. typhosus.....	0.022	0.022	0.022	0	0	0.022	0.011
Staphylococcus aureus.....	0.012	0.025	0.012	0	0	0.025	0.012

[* In this report Solution A was Listerine which had been purchased on the open market by the A. M. A. Chemical Laboratory and sent to Dr. Norton under the code letter "A." The column marked Listerine refers to product purchased by Dr. Norton on the open market. *Both* are "Listerine."—Dir. A. M. A. Chemical Laboratory].

mentioned. Liquor Antisepticus and solution E gave phenol coefficients against *Staphylococcus aureus* consistently above the figures obtained for Listerine, solution A and solution F. However, it should be pointed out that these phenol coefficients are so small that it is doubtful whether there is any significance attached to the differences recorded in the table. In determining the tabulated figures, Reddish's method of calculation was followed; that is, the dilution of the solution under test which kills in ten minutes but not in five minutes, was divided by the dilution of pure phenol which killed in ten minutes but not in five minutes.

Reddish recommends that, in dealing with antiseptics, the ability to kill bacteria in five minutes at 37 C. be used as a criterion of the relative efficiency of such antiseptics rather than the phenol coefficients. Using this point of view, two antiseptics would be compared on the basis of the extent to

TABLE 6.—*Ability of Solutions to Kill in Fifteen Seconds*

	B. Typhosus	B. Coli	Staphylococcus Aureus	Streptococcus Viridans	Streptococcus Hemolyticus
Listerine.....	Killed	Killed	Killed	Killed	Killed
Liquor Antisepticus...	Killed	Killed	Killed	Killed	Killed
Solutions:					
A.....	Killed	Killed	Killed	Killed	Killed
C.....	Not killed	Not killed	Not killed	Not killed	Not killed
D.....	Not killed	Not killed	Not killed	Not killed	Not killed
E.....	Killed	Killed	Killed	Killed	Killed
F.....	Killed 232*	Killed 255*	Killed 254*	Killed 250*	Killed 250*

* Approximate number of organisms in millions.

which they could be diluted and still kill bacteria in five minutes at 37 C.

Solutions C and D undiluted did not kill either *B. typhosus* or *Staphylococcus aureus* in five minutes and therefore do not possess any germicidal power. Listerine, Liquor Antisepticus, and Solutions A and E when diluted with equal parts of distilled water killed the typhoid bacillus in five minutes but did not destroy *Staphylococcus aureus* in this period of time. Solu-

tion F, similarly diluted, did not kill either organism in five minutes. When diluted with three volumes of distilled water, none of the antiseptics or solutions tested had any demonstrable germicidal action even when the time of exposure of the organisms was increased to fifteen minutes.

Tests were also made on the ability of the solutions under consideration to kill bacteria in fifteen seconds at a temperature of 37 C. The organisms used were *B. typhosus, B. coli, Staphylococcus aureus, Streptococcus viridans* and *Streptococcus hemolyticus.* The results are given in table 6. These results were from repeated tests. Solutions C and D showed no tendency to kill the bacteria tested unless small numbers of moderately resistant organisms, such as the streptococci, were used. Even in this case there is some doubt concerning the killing power because of the difficulty in recovering these bacteria in the ordinary broth medium. A more delicate medium was therefore substituted so that the tests did not correspond exactly to those obtained with *B. typhosus, B. coli* and *Staphylococcus aureus.* In all the tests, the solutions were used without dilution. There was no apparent difference in the germicidal action of Listerine, Liquor Antisepticus N. F., solution A, solution E and solution F. [End of Dr. Norton's report.]

COMMENT

These bacteriologic results bear out the pronouncement that Torald Sollmann made many years ago when dealing with "The Broader Aims of the Council on Pharmacy and Chemistry." In an article entitled "Some Studies in Bottled Psychotherapy," Dr. Sollmann appraised the efficiency of Listerine thus:

> What a fine antiseptic odor and taste are possessed by thymol! After comparing the odor and taste of a saturated solution of thymol with a 5 per cent solution of phenol, or a 1 per cent solution of corrosive sublimate, could one doubt for a moment which is the most active? Evidently not, for thymol, plus small quantities of boric and benzoic acid, under the name of Listerine, sells at a dollar a bottle. It is really too bad that bacteria cannot recognize a superior antiseptic as well as the nose—for, according to the bacteriologic test, as quoted by Wood, four hundred and ninety-five dollars' worth of Listerine has the antiseptic action of a cent's worth of corrosive sublimate; or fifteen dollars' worth of Listerine equals a cent's worth of carbolic acid.

SUMMARY

1. The composition of Listerine is essentially that of a solution containing 25 per cent alcohol, 2.4 per cent of boric acid, 0.4 per cent of benzoic acid, with aromatic substances, chiefly thymol (about 0.75 per cent). While the composition of Listerine is essentially secret, the American Medical Association's Chemical Laboratory presents a formula the attributes of which agree with those of Listerine, both chemically and bacteriologically.

2. The *Lancet* report on Listerine is essentially correct as far as it goes. However, in view of bacteriologic findings it is important to note that the interpretation of the *Lancet* report may be quite erroneous:

(*a*) Listerine undiluted will do no more so far as its bacteriologic action is concerned, than other commercial antiseptics; in fact, it will not do as much as many.

(*b*) Listerine diluted, as it is apt to be when used, is practically worthless bacteriologically, while many other antiseptics are available that will stand dilution and remain powerfully active.

These conclusions bear out the work done at the Hygienic Laboratory in 1912 when the germicidal value of a series of proprietaries was determined (using the Hygienic Laboratory Method for determining phenol coefficients). The remarks made on the report on Listerine[5] were indeed significant. They were:

> As shown in the above table, a 20 per cent solution of Listerine did not kill *B. typhosus* within fifteen minutes. The determination of the coefficient is impracticable.

3. The number of organisms killed in fifteen seconds is of little practical importance. A good disinfectant will kill 200,000,000 organisms as quickly as 200 or any other number up to the point where the germicidal activity may be interfered with by extraneous material. If the Listerine advertising copywriters would use a bath tub instead of a test tube, the number of organisms which they could truthfully claim to be killed by undiluted Listerine would be beyond human comprehension. In the absence of comparative data, the statement "Kills 200,000,000 bacteria in 15 seconds" is either meaningless or misleading.

4. Listerine advertising naturally does not bring out the fact that the cost of Listerine is greater than that of many other disinfectants.

5. Listerine advertising implies that when put into a body cavity Listerine has an action similar to that in a test tube experiment; it fails to state that conditions in the mouth are not comparable with those in laboratory test tubes. No mouth wash is completely efficient in sterilizing the cavities of the mouth, nose and respiratory system, bacteriologically speaking. Furthermore, the *Lancet* conclusion that the product is safe in all body cavities was made on evidence so slight and so unscientific that the statement "The Antiseptic Was Proved Perfectly Safe For Use in All Body Cavities" needs much confirmation before it can be taken at its full face value.

CONCLUSION

Listerine is a proprietary name for a solution of well known substances which has little bacteriologic merit. If a physician desires to prescribe a complex weakly antiseptic mouth wash —and this is not to be recommended—he has at his disposal the well known and nonsecret Antiseptic Solution N. F. (Liquor Antisepticus).

Furthermore, the bacteriologic experiments indicate that Listerine will do little more than a weak hydro-alcoholic solution of thymol. On dilution with four parts of water, Listerine shows no bacteriologic action, according to the reports here made.

5. Bull. 82, Hyg. Lab., U. S. P. H. S., April, 1912.

Council on Pharmacy and Chemistry

ANNUAL MEETING OF THE COUNCIL ON PHARMACY AND CHEMISTRY

The Council on Pharmacy and Chemistry of the American Medical Association held its twenty-seventh annual meeting at the headquarters building, 535 North Dearborn Street, Chicago, Friday and Saturday, March 27 and 28. The following members were present:

Reid Hunt, chairman of the Council, professor of pharmacology, Medical School of Harvard University.
Torald Sollmann, vice chairman of the Council, professor of pharmacology and materia medica, Western Reserve University School of Medicine.
W. A. Puckner, secretary of the Council.
E. M. Bailey, chemist in charge, Connecticut Agricultural Experiment Station.
Stanhope Bayne-Jones, professor of bacteriology, University of Rochester School of Medicine and Dentistry.
A. J. Carlson, professor of physiology, University of Chicago.
H. N. Cole, associate clinical professor of dermatology, Western Reserve University School of Medicine.
Eugene F. Du Bois, associate professor of medicine, Cornell University Medical College.
C. W. Edmunds, professor of materia medica and therapeutics, University of Michigan Medical School.
Morris Fishbein, editor of THE JOURNAL.
Ernest E. Irons, clinical professor of medicine, Rush Medical College.
G. W. McCoy, director of the Hygienic Laboratory, United States Public Health Service.
Lafayette B. Mendel, professor of physiologic chemistry, Yale University.

Drs. R. A. Hatcher, L. G. Rowntree, W. W. Palmer and G. H. Simmons were absent. Attending their first Council meeting were Dr. H. N. Cole, who was appointed in May, 1930, and Dr. Stanhope Bayne-Jones, who was appointed in March of this year.

In accordance with the usual procedure, the Council discussed such general questions as have arisen in the work of determining the acceptance of preparations for inclusion in New and

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Nonofficial Remedies during the past year, though questions concerning some specific products were considered. Among the subjects considered, those of special interest to the medical profession were:

Advertising of Accepted Products in Other than Medical Journals.—After extended discussion the Council decided to revise its rules to permit the advertising of accepted articles in professional journals intended for dentists, pharmacists, nurses and veterinarians, provided such advertising does not invite or encourage use by unqualified persons.

Gynergen.—The Council's referee for this product presented evidence which had been submitted by the manufacturer in favor of the use of the drug in exophthalmic goiter. After consideration of the evidence the Council decided that it was insufficient to warrant a revision of the former decision that claims for Gynergen be limited to the action in obstetrics and gynecology.

Ovary Preparations.—The Council discussed the question of continued recognition of ovarian extracts now described in New and Nonofficial Remedies (which are not assayed for follicular hormone content) and the adoption of an assay method for these products. The Council decided that in the light of present knowledge no method of assay for this class of products is available. The Council further decided that ovary preparations, except those containing and standardized for the follicular hormone, be considered unacceptable because at the present time no critical evidence exists proving their clinical usefulness. The Council voted to omit from New and Nonofficial Remedies products of this class at the close of 1931 unless new and favorable evidence develops.

Sale of Digitalis by the American Heart Association.—The Council discussed the matter of the American Heart Association's supplying to its members a standardized digitalis at a cost considerably lower than that possible for commercial producers. Considerations in favor of and others opposed to this practice were brought out. The Council decided that the matter is outside its scope but voted that the American Heart Association be informed of the various points brought out in the discussion.

Dosage of Cod Liver Oil and Cod Liver Oil Concentrates.—The Council's referee for these products presented objections to dosage claims for an accepted brand which had been made by the manufacturer of another of the accepted brands. He reported on the replies to a questionnaire concerning the prophylactic dosage of cod liver oil which had been sent to a list of leading pediatricians. The Council decided that further opinions were to be sought, and voted that the dosage determined from collation of these opinions be included in the New and Nonofficial Remedies article, Cod Liver Oil and Cod Liver Oil Preparations, with the statement that such dosage recommendation is in accord with the best present information. The Council approved a proposal that a joint committee of the Council and the Committee on Foods arrange for the preparation of a series of articles on the present status of knowledge of vitamins A, B, C and D to be published in THE JOURNAL.

Vitamin Assay.—The Council discussed the question of adopting a standard method for the determination of vitamin A potency (other than that now prescribed in the U. S. P.) and of a general standard for determination of vitamin D potency. The discussion brought out the urgent need for the establishment of a testing station where small manufacturers might secure vitamin assays at a reasonable cost. The Council voted that the secretary write to the manufacturers of cod liver oil preparations listed in New and Nonofficial Remedies stating that the Council would be glad to have them suggest a uniform method for the determination of vitamin A and vitamin D potency which they would like to have the Council provisionally adopt. The Council voted further that the distributors of accepted cod liver oil preparations be informed that the Council feels it most desirable that the distributors in conference might formulate plans looking to the establishment of a laboratory in the field of vitamin assay, whose findings could be given general recognition.

Vitamin A Claims.—In view of recent research and the consequent pressure to approve extensive claims for the "anti-infective" effects of vitamin A, the Council's referee for vitamin preparations asked for consideration of what might be permissible claims for the therapeutic or prophylactic effects of this vitamin. It was the general opinion of the Council that claims for the "anti-infective" value of vitamin A in colds and other infections, based on experimentally indicated effects, need further confirmation.

Acceptance of Viosterol Preparations.—In the discussion of this subject it was agreed that viosterol is a common name for irradiated ergosterol and that properly standardized viosterol preparations may be accepted regardless of the technic of preparation, so far as the legal aspects are concerned.

Copper-Iron Therapy.—The Council discussed the evidence for the value of copper-iron therapy presented in connection with a recently submitted product. The Council decided that the present evidence for the value of this therapy in the treatment of anemias is insufficient.

Intern's Handbook.—The committee in charge of the preparation of the material for this book in cooperation with the Council on Medical Education and Hospitals reported substantial progress in its work.

Mercurochrome 220-Soluble.—The Council's referee in charge of this product reported on the progress of experimental work which is being done to check the claims advanced in the advertising. The Council agreed that no action would be taken on the product until the experimental work is finished and formally presented.

Committee on Foods.—The chairman of this committee reported substantial progress in the work being done. The Council voted to recommend to the Board of Trustees that it consider the establishment of the Committee on Foods as a separate council of the Association, with the understanding that in matters of scope and in all questions of a therapeutic nature the new council defer to the Council on Pharmacy and Chemistry.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, Secretary.

ANTIPNEUMOCOCCIC SERUM (See New and Nonofficial Remedies, 1930, p. 351).

Lederle Laboratories, Inc., Pearl River, N. Y.

Refined and Concentrated Antipneumococcic Serum, Type I-Lederle.—Prepared by immunizing horses with intravenous injections of cultures of Type I and Type II pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency for type I pneumococcus, the horses are bled aseptically and the serum is refined and concentrated by the method of Lloyd D. Felton (*J. Infect. Dis.*, December, 1928, p. 543). The finished product contains type II pneumococcus antibodies, but not in therapeutically important amounts. The usual sterility and safety tests are made by injection into white mice and guinea-pigs. The potency of the product is expressed in terms of the unit described by Felton (*Boston M. & S. J.*, May 15, 1924, p. 819; *J. Infect. Dis.*, September, 1925, p. 199; October, 1925, p. 309), this unit being the amount of type I pneumococcus antibody that will protect mice against one million fatal doses of the culture. It is marketed in packages containing 10,000 and 20,000 units of type I pneumococcus.

Dosage.—First dose, 10,000 units, followed by a second dose of 20,000 in one hour; the second dose is repeated at intervals of four to six hours until the temperature falls and beneficial effects are evident.

POLLEN EXTRACTS-SWAN-MYERS (See New and Nonofficial Remedies, 1930, p. 35).

The following products have been accepted:

Mixed Grass Pollen Extract-Swan-Myers (Timothy, June Grass, Orchard Grass, Red Top and Sweet Vernal Grass in equal proportions); Russian Thistle Pollen Extract-Swan-Myers.

Prepared by grinding dried pollen in a ball mill with a liquid composed of 50 per cent of glycerin and 50 per cent of a solution containing sodium chloride, 5 Gm., and sodium bicarbonate, 2.7 Gm., in distilled water, 1,000 cc. Sufficient of the glycerin-buffered salt solution is added so that the total volume is such that each cubic centimeter represents 20,000 units; 1 unit corresponding to 0.001 mg. of dried pollen. This mixture is filtered through paper pulp and then through a Berkefeld filter. It is tested for sterility before diluting, after dilution and after filling.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, APRIL 18, 1931

LISTERINE AND OTHER MOUTH WASHES

Elsewhere in this issue appears the report of the laboratory of the American Medical Association, supplemented by the reports of two competent bacteriologic investigations, concerning the most widely known and most extensively advertised mouth wash now before the public. By its very name Listerine debases the fame of the great scientific investigator who first established the idea of antisepsis and whose work led to the principle of surgical sterilization and asepsis. The vast income of the Lambert Pharmacal Company from this preparation is testimony to but one thing—that modern advertising pays regardless of the actual merit of the product, regardless of any scientific demonstration of lack of efficiency, regardless indeed of possible harm that may result from unwarranted confidence in any unproved method for the prevention of disease.

The president of the Lambert Pharmacal Company said in *Printers' Ink* for March 26 that the company earned $115,000 in 1920, spending practically nothing for advertising; that it earned $7,132,412.55 in 1930 after spending approximately $5,000,000 in advertising. It is significant of most proprietary medicinal preparations that the largest percentage of the income is used for promotion, and, in many instances, the smallest percentage for the actual preparation of the product.

The statement by President John L. Johnston of the Lambert Pharmacal Company is enlightening in other respects. He points out that Listerine Tooth Paste failed because it had a Listerine flavor and that a change in flavor with a reduction in price made a success of the tooth paste. Scientific investigators have urged repeatedly that there is nothing to any tooth paste but the cleansing agent and a flavor. The president of the Lambert Pharmacal Company points out that dramatic advertising copy sells goods. He says nothing anywhere in his article about the quality of the goods. The success of Listerine has been due not only to the amount of money spent on advertising but also to the inspiration of Feasley, who first capitalized the beginning interest of the public in science and educated the people regarding "halitosis." Previous to Feasley, American inhibitions would have made even the mention of bad breath in an advertisement unlikely. Editors considered physiologic functions vulgar and common and refrained from permitting any mention of such necessities in advertising. Today the entering wedge of the Feasley technic has made menstruation, feminine hygiene, birth control, defecation, hemorrhoids, halitosis, body odor and similar subjects the basis of most of the advertising in women's magazines. This is the "health appeal," the most significant appeal in modern advertising to a health-conscious but still hygienically ignorant public.

In a recent issue of one of the women's magazines, some twelve different antiseptics were advertised to the public. Of these, only one had met the standards of the Council on Pharmacy and Chemistry of the American Medical Association. The remainder were direct attempts to exploit to the public with exaggerated claims the alleged prophylactic virtues of antiseptic substances, notwithstanding the fact that the claims were in every instance exaggerated and unwarranted by any scientific evidence. There is no evidence that any antiseptic will cure bad breath, since that is all too frequently merely the symptom of some infection or some physiologic disturbance. There is no good evidence that douching of the nose and throat even with efficient antiseptics will certainly prevent coughs, colds, influenza or sore throat. The effects of the antiseptic are momentary, old germs remain and new germs may enter shortly after the douching. There is no evidence that any antiseptic will prevent seborrheic dermatitis or dandruff, since dermatologists assert the relationship of this disorder to constitutional factors, errors in diet and disturbances of the functions of the glands of internal secretion. There is not the slightest evidence that any tooth paste or mouth wash will prevent or cure dental caries, pyorrhea, gingivitis, or similar disturbances of the mouth and teeth, since here also the basic difficulty lies in the diet and in the lack of suitable dental attention. Thus for two reasons it has become the vogue among promoters of such preparations to couple the urging of their use with the advice of regular visits to the dentist and the physician. This builds good will on the part of easily misled and unthinking members of the medical and dental professions and secures for the purchaser who complies with the advice the attention that may be needed to control his condition.

Even if Listerine and similar mouth washes were actually as antiseptic as their promoters infer, they would not accomplish what is claimed for them. All that any antiseptic substance can do, even those recognized by the Council on Pharmacy and Chemistry of the American Medical Association, is to remove, inhibit or destroy such germs as are actually in contact with the antiseptic for a sufficient amount of time. The supreme ridiculousness of the situation becomes apparent when it is realized that the antiseptic virtues of

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Listerine are so infinitesimal in comparison with better antiseptics as to invalidate even modest claims made for it. The scientific data in support of Listerine cited in the advertisements are based on the use of undiluted Listerine, whereas in actual practice most of those who use it dilute it from two to ten times. This diminishes the Listerine taste or flavor referred to by President Johnston. Moreover, the small bottle at a high price lasts but a short time if the material is used full strength.

As is emphasized in the report by the laboratory of the American Medical Association, the argument that Listerine kills 200,000,000 germs in fifteen seconds means absolutely nothing. Germs are mighty small, and a bathtub full of undiluted Listerine will no doubt kill as many germs as can be gotten into the bathtub, provided the mixture is made thoroughly. Moreover, this fact has absolutely no relationship to the possibilities of Listerine diluted one to three, gargled by an inexperienced gargler with a sore throat, even with the best of intentions. It is claimed that Listerine does not damage tissues; if it damaged tissues it might damage germs. However, as ordinarily used it has little if any specific effect on germs and therefore does not damage tissues.

What has been said of Listerine applies equally to a dozen or more "antiseptic" substances that have been brought into the market by other manufacturers who have perhaps envied the Listerine financial success. Amos and Andy seem to have made popular a tooth paste for which exaggerated claims have been made since its inception and whose composition has changed repeatedly since that time. Encouraged by this popularity, the manufacturers of Pepsodent have brought out Pepsodent Antiseptic. The advertising literature, the advertising claims, the composition and the method of promotion of Pepsodent Antiseptic resemble essentially similar material used in the promotion of Listerine. The manufacturers are careful to advise the use of Pepsodent Antiseptic undiluted whenever possible, urging this, as they say, in order "to get the complete benefits immediately." Obviously such use makes certain of such minor effect as it has, and incidentally it uses up more "antiseptic." There are no data available to indicate that Pepsodent Antiseptic is an efficient antiseptic. From the standpoint of composition alone it would appear that there are many other antiseptics on the market which are more efficient. According to the firm's own advertising material the phenol coefficient of Pepsodent Antiseptic is exceedingly low.

In a recent issue of THE JOURNAL, Allen and Wright reviewed current practice in the examination of antiseptics and offered for consideration certain opinions which are worthy of careful thought:

> Manufacturers cannot be held entirely responsible for the making of exorbitant claims for antiseptics which they produce if the standards of evaluation permissible are the methods of two decades ago and the antiseptics of today. The innocent victims of this unfortunate situation are: (*a*) the mass of the public, who have no choice but to believe what is stated plus what is inferred from the advertisements of these products; (*b*) physicians who are out of touch with the more critical scientific world and hence are in practically the same situation as the lay public in judging values of antiseptics; (*c*) even outstanding leaders in medicine and surgery who have not sufficient time nor equipment to carry on experimental work either in the laboratory or clinic, to determine for themselves the value of the antiseptics they may desire to use; they may be carried away by the names of a few of their colleagues, or institutions, or manufacturing chemists, whose temporary enthusiasm gives unwarranted support to new and inadequately tested products.

These investigators indicate a procedure for the testing of antiseptics which is likely to invalidate promptly the claims made for some of the most widely sold preparations on the market. Moreover, test tube experiments must be supplemented by clinical trials with suitable controls. In the mouth or in any other human orifice the antiseptic solution is mixed with and diluted by such secretions as may be present. This lowers antiseptic action. Until a procedure as efficient as that advocated by Allen and Wright, supplemented by proper clinical investigation, becomes current practice, the public and the medical profession will do well to put their faith only in such antiseptic preparations as have been submitted to the Council on Pharmacy and Chemistry of the American Medical Association and accepted for inclusion in New and Nonofficial Remedies by that council

THE ALLEGED PRESENCE OF BILE SALTS IN BLOOD

Formerly the occurrence of either bile pigments or bile salts in the blood would have been regarded as indicative of abnormal conditions. The bile pigments were assumed to be formed almost exclusively in the liver from hemoglobin liberated on disintegration of red blood cells and then discharged in the bile. Bile pigments in the blood thus became an index of some interference with the normal secretion and discharge of the hepatic secretion in which they are present. Today, thanks to the work of several investigators, it seems assured that bile pigments may have an extrahepatogenous origin. They can be formed in the body even under conditions in which the liver is excluded from participation. The occurrence of bile pigment in the blood in some quantity thus becomes an inevitable consequence; abnormality consists in an excessive content in the circulating medium.

Rich,[1] in 1925, summarized the knowledge of this subject. Hemoglobin, he pointed out, may be regarded as a source of bile pigment, and no proof exists that there are other sources. There is no proof that the epithelial liver cells can form bile pigment under any circumstances; it is certain, however, that the pigment

1. Rich, A. R.: The Formation of Bile Pigment, Physiol. Rev. **5**: 182 (April) 1925.

can be formed outside of and independently of the activity of the liver cells. There is evidence that cells of the reticulo-endothelial type can form bile pigment, but this evidence is not yet complete enough to be regarded as proof. There is no evidence that any other type of cell can form the pigment, nor is there any proof that the pigment can be formed extracellularly by enzyme action. It is not possible to speak with certainty about the normal site of origin of bile pigment. Naturally enough, such conclusions have raised analogous questions with respect to the site of origin of the bile acids. Are they formed elsewhere than in the liver, and do they ever circulate in any concentration in the blood in health as do the bile pigments?

The technical difficulties of identifying and assaying the bile acids in blood are somewhat formidable. In 1928, Aldrich and Bledsoe [2] reported that, when interfering substances are removed as completely as possible, normal blood yields a Pettenkofer value equivalent to from 3 to 6 mg. of glycocholic acid for each 100 cc. of blood. Increased values have been found under certain clinical and experimental conditions. The assumption is that the Pettenkofer reaction, familiar to several generations of medical students, was actually due to bile acids. A recent study by Walker [3] in the department of biochemistry at Oxford University, England, casts doubt on the actual existence of even small amounts of bile salts in normal blood. No evidence could be obtained of their presence. The positive Pettenkofer reaction obtained with alcoholic extracts of blood is attributed to cholesteryl oleate. Thus the tentative hypothesis that the liver may fail to pick out quantitatively the bile salts in the portal circulation or that they may find their way commonly into the systemic system by way of the lymphatics lacks support. There is no convincing evidence of the occurrence of bile salts in normal blood.

INTERRELATION OF BILE PIGMENT AND HEMOGLOBIN

Until recently it was generally held that the bile pigments are formed in the liver from hemoglobin liberated on the disintegration of red blood corpuscles. Views have since been entirely changed, however, by the demonstration that cells other than those of the liver have the capacity of converting the blood pigment into bile pigment at a rapid rate.[4] The theory of an extrahepatic origin of bile pigments has become firmly established in present-day physiology. Indeed, there is evidence that bile pigment is not necessarily related to the destruction of red blood cells and hemoglobin but may have its origin directly in the food intake. This conclusion, however, remains debated.[5] It is not to be imagined, say the physiologists, that the destruction of blood and formation of bile occur only in certain organs. They probably take place in all organs; and in the color of a bruise there is in reality the formation of bile pigment locally.

Recent improvements in experimental technic have considerably facilitated the study of the formation of bile pigment in the body. Instead of the long featured open bile fistula from which the liver secretion was collected for measurement and examination, the renal type is now being employed. This consists in surgical intervention whereby the bile is made to flow into the normal kidney pelvis and is readily collected with the urine. In the latter, the output of pigment can easily be measured. There is no infection of the biliary passages, renal pelvis, ureter or urinary bladder, and the experimental animals remain in good health if they are fed daily some fresh bile by mouth.[7] Under such completely uniform conditions with a standard food intake, the output of bilirubin becomes uniform. In the case of dogs it averages between 4 and 6 mg. per kilogram of body weight a day.[8] Whipple and his associates at the University of Rochester, N. Y., find that, when hemoglobin is administered intravenously to standard fistula animals, the resulting elimination of bile pigment corresponds to from 90 to 95 per cent of the expected increase if there were a quantitative transformation of hemoglobin to bile pigment. Theoretically, 1 Gm. of hemoglobin is equivalent to 40 mg. of bilirubin.

In the severe anemia resulting from hemorrhage, the Rochester investigators [9] have encountered what they term a "pigment paradox." The output of bile pigment falls in anemia, as is to be expected. But when hemoglobin is injected there is a quantitative return of this pigment in new blood cells and at the same time an almost quantitative return in the form of bile pigment from the same injected hemoglobin. Whatever pigment is accepted as the end-product of the introduced hemoglobin, there remains the necessity of explaining the other pigment formation. It is suggested as a possibility that from the injected hemoglobin is split off the pyrrole nucleus to form bilirubin, and from the globin fraction may come much of the new hemoglobin that appears in the new circulating red cells. This means that the body can synthesize the pyrrole nucleus—an indispensable part of the hemoglobin molecule—in considerable amounts in an emergency due to anemia. A new biochemical capacity of the organism is thus presented for consideration.

2. Aldrich, Martha; and Bledsoe, Mary S.: Studies in the Metabolism of the Bile: I. A Quantitative Pettenkofer Test Applicable to the Determination of Bile Acids in the Blood, J. Biol. Chem. **77**: 519 (May) 1928.
3. Walker, E.: The Alleged Presence of Bile Salts in Normal Blood.
4. Whipple, G. H.: Physiol. Rev. **2**: 440 (July) 1922.
5. Rich, A. R.: Physiol. Rev. **5**: 182 (April) 1925.
6. Halliburton, W. D., and McDowall, R. J. S.: Handbook of Physiology, Philadelphia, P. Blakiston's Son & Co., 1929.
7. Kansinow, R.; Engle, L. P., and Harvey S. C.: Surg. Gynec. Obst. **39**: 62 (July) 1924.
8. Sribhishaj, K.; Hawkins, W. B., and Whipple, G. H.: Bile Pigment and Hemoglobin Interrelation in Normal Dogs, Am. J. Physiol. **96**: 449 (Feb.) 1931.
9. Hawkins, W. B.; Sribhishaj, K.; Robscheit-Robbins, F. S., and Whipple, G. H.: Bile Pigment and Hemoglobin Interrelation in Anemic Dogs, Am. J. Physiol. **96**: 463 (Feb.) 1931.

Current Comment

SUGAR CONSUMPTION IN THE UNITED STATES

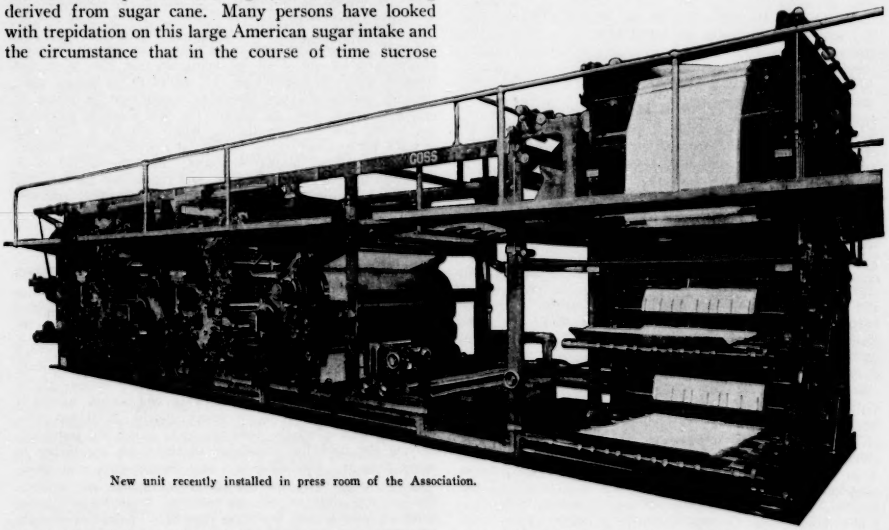
In previous years attention has been directed in THE JOURNAL to the surprisingly large consumption of refined sugar in the United States. The maximum for recent times was reached in 1926, when the figure was more than 5½ million tons, or 109 3/10 pounds per capita. On this basis, and assuming a daily food requirement of 2,700 calories per person, it is estimated that nearly one fifth of the requirement of food fuel in this country was supplied by pure refined sugar. Approximately one sixth of this represents beet sugar, the remainder being derived from sugar cane. Many persons have looked with trepidation on this large American sugar intake and the circumstance that in the course of time sucrose has become an important nutrient instead of merely the condimental food that it was early in the nineteenth century. The record for 1930, supplied by Willett and Gray,[1] indicates an annual per capita consumption of only 99 37/100 pounds. This means an average daily intake of 124 Gm., or 18 per cent of the food fuel quota. The World War gave rise to an excess of refining capacity that still persists. The present annual capacity of United States refineries, based on uniform daily meltings for 300 working days annually, is 7,707,600 tons, or almost 71 per cent in excess of what these refineries produced for domestic consumption in 1930, and slightly more than 50 per cent in excess of what they produced for United States consumption in 1926, when their production for domestic consumption was the largest on record. These are the facts about sugar. It may be added that the prices have never been lower, despite the high duty on the product. Frequently cane sugar has sold, at retail, at a price representing 400 calories for 1 cent, or 2.5 cents per thousand calories.

1. Quoted from the report of the American Sugar Refining Company for 1930.

Association News

ASSOCIATION PURCHASES NEW PRESS

A significant advance in the equipment of the headquarters office of the American Medical Association has been the recent installation of a Goss press which prints at one time ninety-six pages assembled in forms ready for gathering. The new press is driven by a 50 horse power motor with a 5 horse power auxiliary motor; eleven months was required to build the press to order. It is 43 feet long, 16½ feet wide, 10½ feet high, and weighs 80 tons. This press was ordered nearly two years ago.



New unit recently installed in press room of the Association.

It is one of the latest model presses, making it possible to print two colors in one run and to hasten the speed of publication of THE JOURNAL and of *Hygeia*, both of which now have a circulation sufficient to warrant the use of a press of this capacity.

MEDICAL BROADCAST FOR THE WEEK

American Medical Association Health Talks

The American Medical Association broadcasts at 10 a. m. on Monday, 10:45 on Tuesday, 9:15 on Thursday and 10:30 on Saturday, over Station WBBM (770 kilocycles, or 389.4 meters).

The program for the week is as follows:

April 20. Are You Losing Your Hair?
April 21. Are You Losing Your Hair?
April 23. What the Physician Has Done for Childhood.
April 25. Nuts — A High Powered Food.

Five minute health talks may be heard over the Columbia Broadcasting System daily, except Sundays and holidays, from 12 to 12:05 p. m., Central Standard Time.

The program for the week is as follows:

April 20. A New War Against Tuberculosis.
April 21. The Dangerous Age.
April 22. Fighting the Foe of Youth.
April 23. How Is Tuberculosis Acquired?
April 24. How Is Tuberculosis Acquired?
April 25. The X-Ray Lights the Way.

THE PHILADELPHIA SESSION

Alumni Reunions

It is suggested that any Fellow desiring to make arrangements for alumni or fraternity reunions or meetings communicate with Dr. Ralph Getelman, 2011 Chestnut Street, Philadelphia, concerning facilities for such gatherings. Dr. Getelman is a member of the Subcommittee on Entertainment of the Local Committee on Arrangements.

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS

Twenty-Seventh Annual Meeting, held in Chicago, Feb. 16, 17 and 18, 1931

(Continued from page 1236)

DR. HENRY S. HOUGHTON, Iowa City, in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 16—AFTERNOON

PROBLEMS IN MEDICAL EDUCATION

The Present Trend of Medical Education

DR. CHARLES P. EMERSON, Indianapolis: Americans are particularly interested in organization and mass production. We want great railroad organizations and great banks; and the same forces that organized our railroads and banks organized some of our big clinics, too. One cannot deal with medicine as one deals with wood and steel. No two patients are alike. The more one's cases are studied, the more individual differences are found. I would individualize treatments until no two men with the same disease would be getting exactly the same treatment. Medical students rather admire the consultant who will see a patient for a minute and then refer him to the machine, and after going through the eye, ear, nose, throat, psychiatric, laboratory, serologic and all the other parts of the clinic, the patient comes back to him for another five minutes, with all the records on the desk, and the diagnosis and the therapy written out. That may be good business, but it is bad medicine. I would not belittle what advance has been made. I am emphasizing just this: that students get a feeling of finality from the laboratory work; in other words, there is a little greater finality in the shadow on a roentgenogram, a little greater finality in a 4 plus Wassermann reaction, than there is in a physical examination of a patient and the clinical examination after the proper history has been taken and the case has been further studied. There is nothing final in a 4 plus Wassermann reaction and there is nothing final so far as the present case goes in a roentgenogram of the chest. It is evidence which has to be evaluated in terms of the patient. It may mean nothing; it may mean everything. The more laboratory work I have, the harder must I study to see just how that work is to be used in order that I may better understand my patient. I would like to begin teaching medical students their medicine the first year. There is another trend in culture today which mirrors itself in the medical student, one of the hardest to combat that I find. There was, before the war, the possibility of a fine doctor with a poor automobile and a threadbare coat, but since the war the dollar standard has captivated the imagination of the public, and a man is judged as to his income. So young graduates in medicine feel that they must judge their success by the automobile they can drive, and it is a hard thing to get it out of their minds. It is in the general public spirit, it is a part of contemporaneous culture. If the money standard is rather strong in medical students because it is in the society to which they belong, then medical faculties have a still greater problem in combating that idea. Because if medicine is not altruistic and if a doctor's services are not entirely independent of a possible fee, then it is mighty bad medicine. Medicine is essentially an altruistic profession.

Another trend of the public is that surgery is a very desirable treatment for a medical trouble. Of all patients with certain functional neuroses who had come to our clinic, it was found that at least 80 per cent had had a surgical operation, many three or four, and one nine, for conditions which, studied in retrospect, certainly were neuropsychiatric conditions. There again is the problem of medical education, to teach students a great deal more about the reactions of their patients. What they need is reeducation and wise advice. Students must learn early that few things are really settled and those things that are settled are not permanently so, and that they will have to learn soon how to choose between different authorities. The next thing in order to teach students how to swim with the current of medical thought is to urge, almost to insist, that they shall subscribe to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. It was one good psychiatrist who made the remark that truth is a living force in the clinic and laboratory but truth dies and is embalmed in a textbook. The students must be taught to use the living medical thought as it occurs in medical meetings which they are encouraged to attend, as it occurs in current journals.

The last element in connection with the trend of medicine which is similar to the trend in culture is the desirability of more and more institutional medicine. I mean those institutions well endowed and well equipped in each community where a doctor can carry his patient and there can himself treat his patient with the aid of all the equipment that there is in that hospital, which he couldn't possibly afford in his private practice. A medical graduate should be taught that he cannot, in private practice, give the patient the best there is unless he has behind him those institutions which will do a great deal of work for him and for his patients at a price that the patients can afford. That means, of course, that the doctor is in charge of his patient all the time, and responsible for him, but is assisted by these institutions which have partially endowed funds.

The Significance of Present Entrance Requirements

DR. WILBURT C. DAVISON, Durham, N. C.: This article will appear in full in THE JOURNAL.

A Possible Remedy for the Present Depression in Pharmacology

DR. PAUL D. LAMSON, Nashville, Tenn.: The remedy which I wish to suggest for the present depression in pharmacology is rather subtle. The present condition is anomalous. Every one wants to know more pharmacology, and yet the subject is being almost dropped from the newer schools. More and more substances that affect the body are being found, and instead of meeting the need for knowledge of these, we are trying to escape from it. That there is a real dissatisfaction with pharmacology is only too true, it reaches us from many sources. Has one any right to call pharmacology a science until some order or some system has been attained? "Drugs" no longer exist; they are chemicals. Their study is chemistry, not pharmacology. The procuring of pure chemicals or chemical mixtures and dispensing these for medicinal use is the work of the botanist, the pharmacist and the chemist, not of the pharmacologist. The writing of prescriptions is nothing more than writing an order for what the prescriber wants, in the same way a check is written. As a matter of fact practically all standard medical preparations can be bought ready made in far better form than the clinician can order them. It begins to look as if it were a waste of money to advertise pharmacology as it now is or to support it. It has dropped out of medicine twice and will never remain in it. The reason for this is that no one in medicine is interested in "drugs," as such. The only ones really interested in those particular chemical substances used only in therapeutics are the pharmacists who have a purely commercial interest in them. If men working in pharmaceutic concerns develop other interests, they are no longer pharmacists. Let us forget "drugs" forever and go back to the body, and see if there is any place left for the pharmacologist to stake out a field of endeavor.

The real cause of the present discontent has been the lack of a clear definition of pharmacology and its aims, a lack of any orderly system for the classification of pharmacologic facts, and the fact that emphasis has always been placed on the study of "drugs" or chemicals foreign to the body rather than on the study of the body itself, which is the main interest of all

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branches of medical science. A remedy for each of these causes of dissatisfaction has been suggested. A classification has been devised which allows for the first time the systemic arrangement of pharmacologic facts in an orderly manner. I have pointed out that although our field touches on both tissues and all chemical substances, our primary interest is in the body as a whole, and its tissues, rather than in the chemical substances themselves. We become students of the tissues, physiologic mechanisms and pathologic conditions as do all others interested in the medical sciences. The pharmacologist must know his tools, and he has not a few but millions at his command and can make his tool to fit his special purpose. Such a change in point of view brings about an entirely different approach to the subject. For example, we at Vanderbilt have been interested in the finding of a nontoxic anthelmintic for ascariasis. The customary approach to this problem has been to study the substances commonly used for this purpose and to test the anthelmintic properties of related substances, or to modify the existing anthelmintics by chemical means. We on the other hand considered this parasite from our classification point of view as a tissue. We did not begin by the study of chemicals. We first obtained the aid of a helminthologist and studied our tissue in order to find a vulnerable point of attack. The nervous system and cuticle were discovered to be the most easily affected tissues. Substances were tried on these and an enzyme, pyrine, sulphides, certain resorcinols and other chemicals were found to be very active ascaricides. These are obviously not closely related chemical substances. This method of considering tissues primarily rather than "drugs" will, I believe, make a very different thing of pharmacology in medical schools. What actually happens in a department of pharmacology at present is that one begins work by studying some "drug." This substance or "drug" is, however, only one of a million or more. One learns many facts about this one substance but nothing about any other. It will be found that each man in the department is doing the same, carrying out research on a series of entirely unrelated substances. The department is brought together once a year to give a course and then returns to its individual researches. If one meets another pharmacologist it is a rare coincidence that he is working on the one substance out of millions which others are. If he is not, his work is entirely unrelated and of little interest. The utter futility of remembering what each of these thousands of things do discourages any sane man. The end result is that a pharmacologic department is quite apt to become almost exclusively a research department consisting of men specializing on points which do not entail a general consideration of the body. A man may enter such a department with a good chemical but no biologic or medical training, work intensely on some one "drug" and carry out work which may be of the greatest importance and yet obtain no general knowledge of the body, medicine, or of pharmacology as a whole. This is actually what occurs with a great many men working in departments of pharmacology. They see the futility of learning the actions of countless "drugs," settle down to their own work, and have no general interest in the subject as a whole. No matter how much money is spent on departments of pharmacology in which this method of study is carried out, I believe the same sense of dissatisfaction at being unable to cope with the impossible will exist.

If, on the other hand, pharmacology is considered as a study of the body, as is physiology, which is the point of view in some of the most successful departments at present, men will feel a great sense of relief from having a limit to their endeavors. Regardless of how one wishes to attack pharmacology, a method of classifying pharmacologic data must be found. As pharmacology consists of the study of the interaction of two factors, chemical substances and body tissues, two types of classification can be used, a chemical or a tissue classification. Chemicals have already been classified by the chemists, and such a classification has been found not practical for pharmacologic purposes. The only method left is therefore a tissue classification. We have attempted such a one. What is obvious at first sight is our lack of knowledge of the fundamental species of tissue of which the body is composed, and, secondly, lack of methods for showing the action of substances on any given tissue. It is these wide gaps in pharmacologic knowledge which make this method of considering the subject so stimulating as it points out such great fields for interesting and necessary research.

Methods of Examining Students in Europe

DR. W. C. RAPPLEYE, New York: The medical schools and licensing bodies in Europe are interested particularly in evidences of achievement, as far as examinations can measure that result, and not so much in the details of courses, although specified courses are required before the student can take the examinations. Usually little concern is given to students who are unable to pass the examinations. In most countries, students are allowed to continue their courses and to repeat the examinations at least several times. It is believed by some that the emphasis placed on the examinations in European countries is too great because they become objectives in themselves.

There are two major examinations in Germany which are uniform throughout the country, although each university conducts its own examinations. It is this uniformity that permits students to migrate freely from one university to another and to take examinations where they please. The first examination is given at the end of the first five semesters of medical study. About 80 per cent of the students pass at the first trial. The examination is both theoretical and practical. The second examination covers the clinical subjects and pathology, which the student may take at the end of eleven semesters of medical studies. About 20 per cent of the students fail in the final examination each year. The examination in pathology lasts two days. In it the student must demonstrate his ability to do a postmortem examination and to write a protocol. The clinical examination is formidable and extends over a period of about eight weeks for each student. The examination in medicine, for example, takes about one week. The candidate is required to examine a patient in the wards and to write up the history. He must visit the patients daily for a week and write up daily observations. At the end of that time he is given an oral examination. In addition, he must write a paper on therapeutics and prescription writing and stand an oral quiz in pharmacology. A somewhat similar plan is followed in surgery. The student must perform an assigned operation on a cadaver and demonstrate his ability in bandaging, minor surgery and topographic anatomy. There is an almost endless number of candidates presenting themselves for these examinations. Owing to this situation, examinations are likely to be hurried and at times lax. On the whole, judgment is made against a student only in extreme cases.

The examinations in Austria are similar to those in Germany except that the final examination can be taken at the end of ten semesters instead of eleven. There are three major examinations instead of two, a first, a second and a third "rigorosum." The first "rigorosum" is particularly severe, with a failure of about 40 per cent in anatomy, for example. The general conduct of the examinations is similar to that in Germany, although the clinical examinations are less formidable.

The medical curriculum and the examinations in France are prescribed by the government and are uniform throughout the country. All the examinations consist of a first examination and seven course examinations. The medical degree in France can be awarded only by a faculty of medicine, of which there are nine, including Algiers. In addition to these nine faculties there are fifteen medical colleges in which students may study medicine. The student must spend one year in one of the nine faculties of medicine in order to obtain the medical degree. In addition to the course examinations, the students compete for the "externship," which is a hospital appointment. All worthwhile opportunities in the medical course depend on success in this "externship" examination, because the opportunities for a student and later for the physician depend almost entirely on hospital appointments. Between 30 and 50 per cent of the students obtain an "externship," and the unsuccessful candidates continue to attend clinics and university exercises. After a student has been an "extern" for one year or longer he competes in the examinations for an "internship," which is the prize of clinical teaching. He may take this examination four

times. Only between 10 and 12 per cent of the entire student body ever obtain an "internship" and the successful candidates are not permitted to graduate until they have completed the four year hospital service. The examination for the "internship" is based on written and oral examinations in anatomy and pathology. No practical, laboratory or bedside examinations are given. The whole test is theoretical and depends largely on the ability of the student to quote the literature and to present quickly and clearly what he has learned from textbooks, clinics and drill masters. The examinations for the "externship" and the "internship," for which every student hopes to qualify, are not conducted by the medical faculties (except in Strasbourg) but by the public authorities. These examinations are far more important to the student and his future than are the university examinations, except that the student must pass the final examination in a faculty of medicine for his degree. After graduation the physician continues to take examinations for each appointment that is open to him. Most of the examinations are theoretical in character and based largely on knowledge of the literature. Very little weight is given in even the examinations for higher hospital appointments to original contributions or special ability. The fluent, quick minded, clever candidate has every advantage.

There are two features of the examinations in Denmark which are of interest. The first is the use of two external examiners appointed by the state, known as censors. They listen to the questions given by the examiners and the answers by the students but do not participate in the actual questioning. They keep grades for each student, however, and their marks are a part of the determination of whether the student passes. The second feature is the attendance at the oral part of the examination of the other students, who listen to the questions and answers and become acquainted with the procedure which they will go through later. Usually a considerable number of students attend each examination.

In Great Britain two different groups conduct medical examinations, the universities and the licensing corporations. The examinations of both of these groups are under the scrutiny of the General Medical Council, created by the medical act of 1858. Each university and each licensing corporation is free to specify the requirements for its own license and to conduct its own examinations, but the General Medical Council attempts to satisfy itself that the examinations and the courses of study leading up to them are "sufficient" to insure that persons obtaining the qualification possess the "requisite knowledge and skill for the efficient practice of their profession." A special feature of examinations in Great Britain is the use of the external examiner. The examination in each subject in the medical course is conducted jointly by a resident examiner, who is usually a professor in the department, and an external examiner, who is usually a professor in the same subject in another school. Examinations are given at every stage in the medical course. They come so frequently and are so important in the promotion of students that they tend to interfere with the process of education. Students spend a great deal of time and energy in preparation for the succession of tests which they must meet. At some of the universities, between 40 and 50 per cent of the students fail in the medical sciences each year and it is not uncommon for about 40 per cent of the students to fail in the final examinations. The faculties and examiner bodies do not burden their consciences or time with students who fail. They assume very little responsibility for seeing that students do their work or that they pass the examinations. The student is left largely on his own responsibility and moves forward only as rapidly as he can negotiate the examinations set for him. About 30 per cent of the students in the University of London, for example, complete the medical course in the scheduled time. The five licensing corporations are examining bodies only. They give no instruction. The examination in the clinical subjects is quite elaborate and is conducted by four pairs of examiners. A student is never examined by an instructor from his own school. The examinations in surgery are conducted by ten examiners divided into five pairs. The student has "long" and "short" surgical cases, a quiz on microscopic slides, bandaging, instruments and surgical anatomy. One day is spent in the Museum of the Royal College of Surgeons, where a great variety of pathologic specimens are the subject of the quiz. A candidate must pass all the examinations without condition before he receives the qualification of the English Conjoint Board.

DISCUSSION ON PAPERS OF DRS. EMERSON, DAVISON, LAMSON AND RAPPLEYE

DR. H. VON W. SCHULTE, Omaha: I agree with Dr. Davison that the man matters much more than the details of the preparation he has received. I would go almost further and venture that the medical student is a good medical student because of his mental goodness rather than because of his preparation. We prepare in chemistry, physics and biology, we do not prepare in psychology, and we give the man no notion of how civilization came into being, and yet the patient he is to take care of is a member of a family, is engaged in business and has a social status. The student should have it also because he needs it himself in passing through the latter years of the second great plastic period of his development, his later adolescence. I am convinced that the average one of our entering students knows little about the laws of the mind and has few mental tools to use. I base this on the discussions of the large number of delinquent and subdelinquent students. I find that their resource, one thing they believe in and rely on, is what they call work, which resolves itself largely into prolonged hours of reading. To analyze a subject, a paragraph, to pick out its essential things and see their relations with others is well outside the student's capacity, unless he is guided. We send men through college and medical schools without even suggesting to them that there are laws of learning, or suggesting to ourselves that there are pedagogic procedures. I believe that if we would carefully analyze our requirements we would not be so prone to increase the number of hours given and would have time to leave room for some elements of a liberal education, which I should define as an appreciation of the modern environment.

DR. HAROLD RYPINS, Albany, N. Y.: The American method has been to attempt to place on the medical school the responsibility for certifying its graduates, and the state boards within the last few years have felt increasingly that, the bad medical schools having been eliminated, the good medical schools should themselves be responsible for this certification. So less emphasis has been laid on the medical licensing examination. It would be rather a step backward if we began to give better licensing examinations. I look with a little skepticism, for instance, on the value of substituting as good an examination as the National Board examination is for as bad an examination as the New York board's, because I think if the state really gave a searching examination there would be the temptation on the part of the medical schools and on the part of the students to spend most of their time training for this examination. No matter how good the examination is, it is not reliable as a means for ascertaining the ability of the candidate, and I think we should give only such an examination as will eliminate the really unfit candidate. At present about 97 per cent of all the New York medical students pass our examination the first time, and in view of those circumstances I think it would be a mistake to make much fuss about that examination. In reference to the preliminary qualifications, I agree entirely with Dr. Davison. If Minnesota likes to take men who are well trained in physics and Wisconsin likes to take men who are well trained in Greek and Duke likes to take men who are not trained at all, I think they should be permitted to do so. In that way we may ultimately find out what the best training is. As long as we have a set standard of training we are not going to find out by comparative methods which is the best. I think the sooner the medical schools have practically complete responsibility for the education and certification of the graduates the better off we shall be and I am confident that that method will be superior to the European method of really exceptionally fine examinations.

DR. WILLIAM JEPSON, Sioux City, Iowa: Fifty years ago, students that sought to enter the practice of medicine did so because they had a love for it; at least they thought they had. The situation has changed so that they must come from the wealthy classes and the classes that wish to see their sons

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occupy a position of prominence. Ofttimes students who themselves don't care whether they are graduates of medicine or not are simply driven to it. That fact makes it necessary that those charged with the admission of students scrutinize them more carefully. A student who has no interest in medicine cannot hope to succeed at it. The state boards at one time served an exceptionally valuable purpose, when there were many schools, 160 or 170 of them, private institutions dependent for success on their pupils, and with a great variation in degree of teaching. That period is largely past. All medical schools now are attached to universities where the question of whether they graduate 1 or 100 is absolutely immaterial, and I do not think it ever enters into the minds of the faculty at all as to whether this or that boy should be favored. Consequently the graduates of class A medical schools have passed far more severe tests in qualifying for their degree than is possible for any state board in any state in the Union to set for them. The fact that students from the best schools fail before state boards does not mean anything.

DR. EDWARD H. HUME, New York: More important than many of the things that have been said about the testing of students is that there is need to find out in ways not yet discovered what sort of a character the man brings to the medical school rather than trying to find out how much curriculum he has had before he gains the medical school; if it is true that we are going to deal with doctors of the community, trained men who are going to practice medicine, we have got to have men who can see the patient whole and who can see the needs of society. We have got to discover, in order to find what character is, some method of inquiring into the candidate's attitude toward life. I would rather know that. The suggestions of our friends in the mental hygiene division as to looking into the mind and character of the student are fully as vital as some of these more mechanical things of which we have been speaking so fully.

DR. B. C. H. HARVEY, Chicago: Dr. Davison remarked that in trying to find out the character of students who apply for admission it has been customary to write letters of inquiry to former instructors. Our experience has been very satisfactory. There is a way to make those letters a much more valuable guide in our work of selection. In cases in which a student proves after he comes to school to be incapable of doing his work or to be lacking in some qualities about which we inquired in our letters, we should write another letter to the instructor in the college who gave us misleading information, and ask him if he has further comments to make. In the other cases in which the students have proved to be particularly good students, it would be a grateful thing to write to the instructors who recommended them and thank them for the information. It will make him feel that he is directly concerned not only in the work of his own college but in our work as well, and that will be strictly in accordance with the fact.

DR. F. C. WAITE, Cleveland: One of my friends who is a professor of biology says that, in a certain institution when a student goes and asks why he is not accepted, he is told because the professor of biology did not write a good letter for him, and sometimes they show him the letter; it goes back to the president of the college, and the president calls the professor of biology on the carpet and wants to know why he did not write a good letter. Only if those letters are confidential will it be possible to get the truth from a professor of biology and chemistry. The best thing that can be done toward improving premedical education is in some way to draft a statement as to what sort of ability and facility is needed in the medical schools. When the teachers of these subjects know what the student has to do, they will prepare the man to do it.

DR. ARTHUR D. HIRSCHFELDER, Minneapolis: I should like to discuss Dr. Lamson's paper on what is wrong with pharmacology. In the last analysis, pharmacology is the chemical warfare on disease. As far as the student is concerned, what he wants to know when he takes pharmacology is how to relieve the suffering of his patients. Therefore in teaching pharmacology we should present the subject of the sick human being as an example of pathologic physiology and use the experimental animal as an example of normal physiology. That leads us back to the thing that Dr. Lamson emphasized, namely, the importance of studying the action of drugs on the body as a whole, the fluids of the body, the surface layers of the cell, the colloid chemistry. The simple constituents present in the body or present in plants, or the simple substances obtained ready-made from organic chemistry are only the starting point; then we may have to do as Ehrlich did, build up new substances step by step, each one better suited than the other for the specific purpose of destroying the parasite or of stimulating one or the other organs or of altering the particular physiologic mechanism that must be altered in order to relieve the disease. To do that, we must have chemical assistants, assistants, sometimes, who are physicists, or members of our staff who are chemists and physicists, or we must become such ourselves. The progress in treatment of disease is going to be made in those ways. The manufacturing chemists are realizing that and have such staffs, far greater resources, far greater financing for their research than have the medical schools.

DR. HENRY S. HOUGHTON, Iowa City: A year ago I began the preparation of ground for considering things of an imponderable nature with respect to the admission of students to a state university and disseminating those things to the men and women who represent the counselors of high school youths with respect to the study of medicine. Accordingly I wrote a pamphlet and sent it to all teachers of science in the high school, to high school principals and to superintendents in the state, and in that I discussed things which, I explained, must necessarily lie outside the formal requirements for admission to the college of medicine. I had three or four headings: 1. Health. 2. Brains. By that I meant a clear thinking and rapidly acting mind as a fundamental qualification for the study of medicine. Then I went on to discuss the usefulness of English and the character of its study. 3. Aptitude for science. That, of course, is being met now in this very general way by the use of the Moss aptitude tests. 4. Morals, along the line which Dr. Hume brought out, the qualities of assurance and integrity and high idealism that lie at the base of the whole business of beginning the profession of medicine. 5. Means. We are not in the situation of wishing to stifle the poor student who has a fine mind, but we find boys with the idea that they can work their entire way through the medical course, who have their morale and their health completely broken by the end of the second or third year. The loss is enormous. Gradually I hope to permeate to some degree the state generally and those people in the schools who are guiding youths to understand that the mere laying down of a formal regulation of so many hours and high school units and one thing and another is not absolutely the essential thing.

DR. REGINALD FITZ, Boston: As a clinician I cannot quite resist the temptation to discuss the paper by a pharmacologist. The history of the medical schools, in this country at least, shows that they are all built up on the Philadelphia school; certainly Harvard is, because when in 1783 it was opened there was, in the first place, a professor of surgery who was also teaching anatomy and pathology, there was a professor of medicine who was also teaching physiology, and there was a professor of chemistry and materia medica, and these general professorships have continued and I doubt whether the pharmacologists are in any less dignified position now in medical education than they were in 1783. A medical faculty should be looked on as a team whose idea is to turn out in the course of time at their disposal as many well trained students as they possibly can. Professors also are expected perhaps to stimulate a certain number of students each year to go ahead in the various fields of knowledge that are being taught. At this point the clinician takes them up and goes ahead as well as he can, but I think it is important to emphasize the fact that an important part of the teaching is done by the physiologist, by the pharmacologist, and so on, in the teaching of method in the first place, in the teaching of facts in the second place, and perhaps working as an inspirational agent in the third place.

DR. W. S. LEATHERS, Nashville, Tenn.: I want to mention the necessity of providing some plan for the supervision of the health of medical students. I believe that the health of the medical student is being neglected, certainly in many medical

schools, and as a consequence this student, who is being placed under considerable pressure at times, breaks when he reaches about the third or fourth year. There have been some sad experiences in this respect at Vanderbilt. We have introduced a system of physical supervision of all new entrants to the medical school as a procedure in the admission of students, and we have decided to require students to have a physical examination on applying to the medical school for admission. Recently one of our students failed in anatomy. He walked in, the professor told him that he failed, and he had an epileptic fit, which seemed to have been the first epileptic fit that he had had. Of course, it is possible we could not have determined just the background of that particular student, but things of that kind occur. I simply want to emphasize the importance of the item of health, emphasized as one of the fundamental requirements in the admission of medical students. I believe a period is being passed through which will require careful analysis with reference to dealing with this problem of the licensing of medical students, but it seems to me that there is a value attached to an examination for students who wish to obtain a license, which may be considered as an honors examination. That is an examination which will to a definite extent designate professionally the standing of this student in an unmistakable way. Examinations are necessary in order to determine certain requirements. I am happy in the thought that examinations in this country may be looked on as of a standard character and may be regarded as an honors examination for the practice of medicine.

DR. T. J. CROWE, Dallas, Texas: As to the paper on pharmacology, I believe that the manufacturing chemists today are furnishing the pharmacologic detail man. I think pharmacology has been much neglected in the medical colleges of this country. I think the doctor's paper on pharmacology is timely. I believe the day is not far distant when the medical colleges will have to graduate two kinds of doctors; they will graduate a physician and they will graduate a master in surgery, a master in physiology, a master in obstetrics, a master in any one of the several branches of medicine. Most graduates nowadays are graduates of specialties. They have an idea before they finish about just what particular branch they are going to take up. If some such plan as suggested is adopted in reference to the specialties, the country doctor will be obtained to provide for the rural sections. There ought to be two kinds of nurses, a master nurse to go into the operating room or take over a difficult case, and a practical nurse who can sit at the bedside and attend to the ordinary duties that any sensible person could do.

FEBRUARY 17—MORNING

DR. ADOLF MEYER, Baltimore, in the Chair

THE TEACHING OF PSYCHIATRY

Some Present Day Trends in the Teaching of Psychiatry

DR. FRANKLIN G. EBAUGH, Denver: Psychiatric teaching is not fulfilling its educational possibilities, although there is much good work being done in this direction. That this is true seems evident when one takes a glance at the present magnitude of nervous and mental disease as a public health problem. It is known, for instance, from dependable sources that in 1928 one person in each 325 was in an institution for nervous and mental disorders, including mental deficiency and epilepsy. This ratio is 7.5 higher than that for tuberculosis. There are about 300,000 mental hospital patients with 75,000 new admissions each year. Existing facts indicate that one half of the admissions to mental hospitals could be avoided by complete studies and guidance of behavior and emotions during childhood and adolescence. These inadequacies of psychiatric teaching are understood when an analysis is made of the time devoted to the teaching of psychiatry in the medical schools. All class A medical schools were asked regarding the place taken by psychiatry in the 1930 schedules. The data obtained indicated that the total number of hours in twenty-two schools devoted to the teaching of psychiatry in 1920 was 743, whereas this total had increased in 1930 to 1,195 hours. The average number of hours per school devoted to psychiatry in 1920 was thirty-four, and this had increased to fifty-four in 1930. Only seven schools from the entire group showed adequate facilities for child guidance teaching. This study showed a universal omission of sufficient clerkships for students and ward contacts with individual psychiatric patients. With the exception of approximately ten schools, adequate provision for a full course in all departments of psychiatry was lacking. In the remaining group of schools for which information was available through catalogues, no provision for psychiatry was found in two schools, inadequate provision in twenty-nine schools and adequate provision in nine schools. Adequate teaching of psychiatry should rest on adequate instruction in anatomy, physiology and psychobiology. Teaching from this point of view should have the desired result when the student treats patients in other divisions of the hospital who, according to the internist and the surgeon, "have nothing the matter with them." The student should consider these patients as presenting interesting problems of psychobiologic adaptation. It is certainly not practical or desirable to transfer all these patients to mental hospitals, but they should be recognized and treated in any branches of medicine. Physicians should apply psychiatric methods just as the psychiatrists make use of all the methods presented by the other departments of medicine even when patients present mainly psychiatric problems. Teaching from this point of view may be expected to make many contributions in the field of preventive medicine and hygiene. According to the psychologic view of Adolf Meyer, mental illness is regarded as the gradual accumulative result of unhealthy reactions of the individual to the demands of his environment. In a given case, all the factors that go to the production of these reactions are traced. These factors can be summarized as somatogenic, neurogenic, exogenic, psychogenic and constitutional. This view has resulted in a departure from the old descriptive types of psychiatry to the present-day genetic-dynamic concepts in which the total organism reacting to a total situation is studied. In this sense one is "dealing with functions of the total person and not merely detachable parts." This view has made it possible to study difficulties of the total unified adjustment and behavior of a patient. In an approach to teaching psychiatry through the genetic-dynamic point of view, Meyer has insisted that the student should work out a personality study of a certain individual, preferably himself, with the purpose of obtaining a picture of the live human organism studied as a personality. Meyer aptly states that such a personality study is as important a procedure as the dissection of a cadaver and naturally an essential supplement of ordinary training. The student studies life facts and situations in his patients and is not drilled in schemes for classifications of mental disorders.

In the University of Colorado Medical School the teaching of psychiatry is patterned closely after that developed by Adolf Meyer; fifty-four hours are devoted to class room discussion and demonstrations and ninety hours to clinical clerkships in the ward and outpatient clinics. During the second year the student spends ten hours in a course in psychobiology. He studies facts regarding his personality. He is given some insight regarding the mechanisms and motivations of behavior and of mental conflict and its consequences, such as anxiety, repression, dissociation, overcompensation, projection and other results of conflict such as sublimation, mannerism, slips of the tongue, and forgetting. This course is followed up in the third year work, when the student spends forty-four hours in class work and discussions of the various reaction sets beginning with the organic reaction types and ending with the psychoneurotic reaction types. During this year the student conducts actual individual case studies, spending eighteen hours in section work. The teaching of psychiatry should be combined with that of other departments. This year arrangements have been made for combined teaching with the departments of gynecology and obstetrics. In the fourth year there is no didactic work given in psychiatry. The student spends an average of two hours daily for six weeks in the psychopathic hospital. He likewise attends the regular outpatient clinic. It is estimated that before graduation each student has contacts in fifty individual cases and many students have reported that they have worked up approximately double this number.

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Time will not permit me to review our postgraduate teaching, especially the two year period developed for the training of fellowships in psychiatry. Each fellow constitutes an integral part of the staff of the hospital and is given definite ward, outpatient and community clinic responsibility. The great contribution psychiatry can make is certainly in the educational field. A department of psychiatry has three fundamental educational functions: first, the teaching of undergradutes and graduates; second, scientific research, and, third, extramural education. To meet these three fundamental functions fully, teachers of psychiatry should observe educational needs in a broader way than has been done in the past.

The Training of the Specialist in Psychiatry

DR. C. MACFIE CAMPBELL, Boston: The training of the psychiatrist raises questions of premedical education, of the general medical curriculum, of graduate work. Within the last few decades the walls that separated mental patients from the general run of medical and surgical patients and from the normal have begun to crumble. The psychiatrist does not find his field limited to insanity, nor is there the same isolation from the general stream of medical progress and from the life of the normal community. The field of psychiatry is wide, ranging from well marked mental disorders to the greatest variety of social maladjustments. In the center of the psychiatric field is the group of patients suffering from nervous and mental disorders. The principles made familiar in the study of nervous and mental disorders are of great value when applied to special fields, as in dealing with the problems of industry, of the school, of delinquency, of disturbed domestic and social relations. The psychiatrist is a physician who requires a fair training in internal medicine and in neurology, and who takes up the study of the human personality and its reaction to environmental demands as a fundamental study. Much may be done in the college and in the preclinical and clinical years to give a basal knowledge of human nature, its individual and racial development, and a general outline of psychopathology. This insight into the problems of personality becomes further enriched by the material which the graduate begins to accumulate when he first comes in contact with mental and nervous patients and while he is studying their symptomatology, their development and their treatment.

It is well for the psychiatrist to have experience with the problems of mental disorders not only as seen in their more acute phases but also as seen in their later phases; in order to have a well balanced view of the whole field the psychiatrist must have had adequate experience with the minor psychoses (psychoneuroses), with the disorders of childhood and with some of the social maladjustments.

Throughout his training the psychiatrist is dealing in one large division of his work with the reaction of individuals to their special life situation, and therefore he is bound to make a systematic review of this life situation, to analyze its significance, and to know something of the technic of its investigation.

Psychiatry and the General Physician

DR. H. DOUGLAS SINGER, Chicago: To many, even among physicians, psychiatry implies only the treatment of persons suffering from mental defect or a psychosis—illnesses that are popularly spoken of as insanity. One unfortunate result of this view is that many physicians regard psychiatry as strictly the province of a specialist. This view is reenforced by the fact that patients with these forms of illness are segregated in special hospitals and removed from the care and observation of the general physician. The province of psychiatry, however, is far greater than this; it covers the treatment of persons suffering from conflicts between the man as a whole, an organism acting as a unit, and the facts and circumstances under which he must fulfil the functions of life. Such conflicts may be the result of some illness or defect in some part of his body; they may arise from the restrictions that are placed on him by the conditions in the world to which he must adjust himself.

Psychiatry involves attention to much more than the care of the body of the individual patient. It must take into account facts and circumstances of his social relations, and conditions in the world outside him. Furthermore, it brings the psychiatrist into contact with other fields of scientific discipline, not only with psychology but also with sociology, pedagogy and criminology. In most instances the first person to be consulted in regard to unusual or problem behavior on the part of a particular person is the family physician, who must be prepared to recognize the facts for what they are and must know something of the agencies to which to turn for help. This province, even to the adoption of the title psychiatrist, has been increasingly invaded by nonphysicians. Sometimes, even, the physician is called on by such lay persons to treat a bodily disease while leaving the handling of the mental situation to the nonmedical expert. Psychology stands in the same relation to psychiatry that physiology does to medicine. The psychologist brings the special technic of his science; in his turn he has forged valuable weapons and thrown new light on the significance of clinical observations. It still remains, however, the function of the physician, making use of such tools, discoveries and interpretations as have been established by the physiologist and the psychologist, to apply these weapons to the art of treating patients.

Heretofore, the general physician has usually regarded the field of psychiatry as beyond his ken. His training has been intensively concrete and has led him to insist on measurable observations. Today, however, psychiatrists, physiologists and psychologists are beginning to provide means and tools for the measurement of processes that have hitherto seemed intangible; this development is growing rapidly and the essential unity of soma and psyche is becoming steadily more obvious. There are accumulating means of studying the activity of the body as a whole in an objective and controlled manner through such procedures as metabolic ratings, chemical studies of the blood, changes in pulse rate and pressure and in respiration, and changes in electrical skin resistance. These investigations serve to bring home the fact that the psychiatrist is still a physician and that he works with tools that are often identical with those employed in the everyday practice of medicine. A field of psychiatry which, whether he will or no, thrusts itself on the general physician and must remain largely his job is the field of the neuroses or psychoneuroses, disorders that are popularly, and often medically, classed as "nervous." These disorders, in spite of the "nervous" qualification, are strictly mental; that is to say, they are reactions of the patient to the restrictions and conditions of society under which he must seek the satisfaction of his innate needs and desires.

Though he does not realize it as a rule, the physician in general practice is consulted more frequently because of disorders of this kind than because of all other ailments combined. Even when a patient presents evidences of definite disease or defect in some part of the body, the principal problem presented in therapy is frequently mental. To apply remedies, medical or surgical, designed to relieve the symptoms of which the patient complains while ignoring a search for conflicts that may exist between him as a man and the conditions that surround him and which may be the direct cause of the apparent disturbance in health, is, to say the least, poor practice. Continued ignoring of the mental aspects of illness and disability must inevitably lead to the further development of cults and therapies which all, consciously or unconsciously, honestly or merely for the exploitation of patients, make use of some form of psychotherapy. It is not sufficient to brand such patients as nervous, assure them that there is nothing wrong and tell them to snap out of it. The disability is real, even though one may fail to find any structural cause, and such an attitude on the part of the physician can accomplish nothing else than to drive the patient to consult others who will promise relief or cure.

If the statements concerning the frequency of mental problems in the practice of the general physician are true, surely the subject should receive adequate consideration in the medical curriculum. Often there is little more than clinical or didactic instruction concerning the psychoses. The principal need, fully recognized in some schools, is instruction in dynamic or physiologic psychology.

DISCUSSION ON PAPERS OF DRS. EBAUGH, CAMPBELL AND SINGER

DR. A. M. BARRETT, Ann Arbor, Mich.: In organizing psychiatric teaching, it is not so much a question of having a special psychiatric unit in connection with the medical school

or of the total number of hours to be allotted for psychiatric teaching as it is the method by which the teaching of psychiatry is conducted and the knowledge of the teachers of a special field. The aim of psychiatric teaching should be to equip the physician to understand a patient who is mentally disordered. The content and arrangements of the various courses in a medical curriculum, designed to provide a general psychiatric training for all medical students, should be chosen and conducted so as to give an integrated knowledge of the subject. The beginning course should be medical psychology. The content of this course should be a psychology which equips the physician to understand a person functioning as an integrated organism. This course should be followed by psychopathology, and after this would come the clinical psychiatry, with intimate contact with the patient. With more specifically psychiatric instruction should be given instruction in the anatomy and pathology of the nervous system and the interrelation of the psychic processes of the body. Psychiatry has a particular way of doing its problems of human illness which would be of much value to other branches of medicine if its conception would enter more widely into the understanding of the disease. There is another aspect of psychiatric education which is presented to those psychiatric clinics that are a part of a university organization. That is, the opportunities that are available for giving courses of instruction in some aspects of psychiatry in undergraduate departments or in schools of law. For many years, at the University of Michigan, the department of psychiatry has given courses in the undergraduate departments of sociology and has participated in the mental hygiene service for students. No other branch of medicine is in such a favorable position to aid in the understanding of social problems in wide variety as is psychiatry, and in the application of this the public will gain a more general appreciation of medical aid in dealing with human disease.

DR. A. H. WOODS, Iowa City: I remember once having an extremely difficult task which I was discussing with Simon Flexner, William Welch and Richard Pierce as to the establishment of a department of neurology and psychology. I pointed out to them that perhaps within twenty years or a generation, or perhaps two generations, the world would come to understand the exact significance of the functioning of the brain and how much it had to do with human welfare, and no doubt by that time the medical colleges would be a department of neuropsychology with appended departments of surgery and medicine and other minor branches necessary to take care of those insignificant somatic diseases that arise in all patients. I was unsuccessful because they were not convinced. In the University of Iowa, for instance, we have men who are teaching other subjects. They impress on the committee that makes the curriculum the importance of a large number of hours necessary for the teaching of surgery, general medicine and other branches. At present, our students are greatly overburdened as to hours. They have not nearly enough free time for investigative work. As a member of the committee which fixed the proportion of hours for psychiatry for undergraduates, I felt it would be a total of sixty-four hours required for the year, and an almost equal amount possibly in the last year for elective work for those students anxious to go into that kind of work as a specialty before graduation. Therefore, in the second year of our medical course we have an opportunity to deal with the students and instruct them in the significance of human behavior. In the third year we have an opportunity for one semester to deal with teaching them from patients the elements in behavior in the mental diseases of various kinds; while in the final or fourth year we have an excellent opportunity to present the changes that actually take place under disease conditions. I have talked to them after graduation and during the latter part of the courses to try to find the difficulties, why so many practicing physicians look askance at psychiatry. I think there are three sound reasons. The first reason for aloofness which the fellow practitioners show for it is that it is difficult, hard to understand, and one must go into it thoroughly to understand it. The second one is that for this reason verification is difficult. The student wonders why a certain man has made a particular inference from his data; he does not see the connection. Our interest leads us afield. We want to show we have done something, and, since it is a field difficult of verification, it is a great temptation to all of us to make statements at the end of which we ought to write "Perhaps some day we shall be able to demonstrate this." The student wonders, after all this work, what we are doing. What are the results? We can compare them with the results in the cases of hopeless cancer and many of the fatal diseases. But, after all, the student comes to this question: Where you have produced a cure, how can I see it is different from that which is just a course of nature, if one had just observed the ordinary hygiene? I am not discouraged about psychiatry. I believe it is the most wonderful field because the brain function is the most important. I believe, however, in the simple adherence to the canons of science, the insistence ourselves in not becoming merely lecturers but clinging closer to our clinical work and maturing ourselves and satisfying ourselves in regard to these difficult problems, such as schizophrenia and psychoneurosis. If we will keep ourselves nearer the clinical sources and venture into a field to make inferences only so far as we can do it cautiously and convincingly, I am sure we shall carry our students and fellow practitioners into a field where they will look at it with less difficulty.

DR. LLOYD H. ZIEGLER, Albany, N. Y.: I am working in a community which has had excellent psychiatric and neurologic traditions. My course in psychiatry is being organized in conjunction with courses in neurology. In psychiatry, I feel in the first two years of the work the students have been so thoroughly saturated with such concrete subjects as anatomy and physiology that they have gained a point of view they are liable to carry with them. So I propose to acquaint the student with some phenomena not entirely organic and not entirely dependent on the somatic structure. I think the student welcomes this opportunity. I asked the students sometime ago what method they thought was most effectual in learning psychiatry. Invariably they said they preferred the method of working with patients. So I assume that, if the word of the student is a criterion, we should have fewer lectures and more opportunity to work with the patient. We should teach our students to go into a room, sit down beside the patient, possibly confer with his relatives, and find out as much as they can about that patient. I question whether, in medical courses, we give the student the opportunity to study two or three cases as thoroughly as he ought to study a patient. He rushes from one thing to another. I have patients who can talk with the doctor and explain many of the puzzling problems. I was amazed to find that half my students were of the belief that they should not take any of the statements of the patient for granted; that the patient was brought into the hospital in a condition in which his word was not worth anything. I think many of the general practitioners have the idea that, when a patient is bad enough to be taken to a psychiatrist, nothing that he says is reliable. We must give the student opportunity to digest, actually soak up, what the thing really means. I think that many of the students have mental dyspepsia about the long, hard courses they have to take. I would rather have the students study three cases thoroughly than to give them fifteen and not have them get them as thoroughly.

DR. MAURICE H. REES, Denver: Those who are in close contact with the rural community cannot help regretting the passing of the general practitioner. When one stops to analyze the qualities in him that were most desirable, the salient thing was the ability to utilize applied psychology. If so much of the general practitioner's work was applied psychology it is up to us, in the training of medical students, to give each student the fundamentals of psychiatry. The problem of the mentally ill is entirely too great to be handled alone by psychiatrists. We have only begun to touch on the possibilities in psychiatry. In our institution we feel that practically all the patients who come into that hospital, especially the surgical cases, are in need of mental adjustment and this year we are making a definite study as to those needs. Some of the teaching in the colleges should be adjusted. Students are better off if they come to us without psychology. Many universities are giving courses that they should not give. When any university or college gives a course in abnormal psychology and that course is given by a layman who himself is suffering from chronic neurosis, I think there is something wrong with our institutions. We should see that our students don't come to us after a course of that type.

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DR. C. M. HINCKS, Toronto: It has certainly been worth coming a thousand miles to hear those three papers. One thing that interested me was the matter of bringing to the attention of the medical students emotional concomitants, mental concomitants in connection with obstetric and gynecologic practice. It seems to me that one of the great goals in medical education will have been achieved when medical students will have learned to approach every individual case not only from the somatic angle but from the mental angle as well. The most distinguished gastro-enterologist of my acquaintance is a man who approaches every case from this dual angle. Another point is that it must not rest with the professor of psychiatry alone to stress mental factors. These must be stressed by the professor of medicine, the professor of surgery, the professor of gynecology, obstetrics and pediatrics. If not, can one complain if the medical student perhaps is unconvinced, if he is getting a barrage, as it were, on the somatic side? If the professor of psychiatry is a lone voice in the wilderness in the medical school he cannot carry through alone. Progress in this field will come when the professors of the various subjects preach the same doctrine and practice it. Perhaps a start will have to be made with faculties in this program.

DR. J. L. MCCARTNEY, Connecticut: If we are to have success in the teaching of psychiatry, we must straighten out our own problems. We cannot expect any physician to see problems in his patient without having straightened out his own problems. I think the psychiatrist is realizing that medical students are possibly some of the most conflicting individuals in the university setup. If successful psychiatrists are to be turned out they must be straightened out emotionally.

DR. GEORGE S. STEVENSON, New York: The opportunity in the various outpatient departments of Cornell for bringing in a consideration of the whole patient has been rather unusual. The first effort in that department was to study cases as a routine to determine what emotional and social factors showed a relationship to the complaint of the patient. It is easy to find emotional and social factors in all cases, but to find those which are related to the complaint of the patient restricts the number. A study of 150 cases showed that 65 per cent had such a related emotional or social problem. Of that 65 per cent, 19 per cent had a problem of such severity that it required psychiatric consultation in order to deal with it adequately; but there was left this 46 per cent which have to be dealt with continuously, because they are in such large numbers, by the gastro-enterologist. Last spring a fourth year medical class was brought into this experiment. That medical class, going into the gastro-enterologic department, assumes the responsibility of the physician. They are the physicians for the cases. The staff is in the background. It was a little more difficult with psychiatry because the students could not bring a question and hand it to the psychiatrist, so the psychiatrist had to become the assistant to the student and carry out the work to the patient in that way. In doing that, it became evident that we are still not reaching the point that we want. The case is still two cases. It is dealt with either as a gastro-enterologic case or as a psychiatric case. I think we have been able to boil down the approach to one starting point. I don't think that is necessary if the student has a background in his first and second years, but we have medical students who have not had that background, and physicians all over the country without that background on the selection of a single point which can be gotten across, which is highly important. I think that the point which has been selected and which will be used as the basis for the next class is for the physician to approach the patient this way: "What do you consider as the cause of your trouble?" Usually a patient does not have an opportunity to express himself in that way. If he starts to tell what he thinks is the cause of the trouble, it may be cast aside; but if he is given an opportunity to express himself, in that way the physician gains the confidence of the patient and gains much more than that, because the patient's interpretation of his own troubles reveals many of his own personal and social problems.

DR. HANS DEUTSCH, Webster Groves, Mo.: In order to change the concept of psychiatry among the medical profession, I would urge psychiatrists individually to change their own concept of psychiatry by straightening out the chaos that exists in the field of psychiatry and not to isolate the general school by the attachment of isms, allowing each school to stand out as an important field in itself; to be at least open minded and accept some of the contributions that cannot be rejected because they were made by recognized investigators. Unite them into the field of psychiatry and strengthen your method of changing this concept among the medical profession.

DR. ADOLF MEYER, Baltimore: I think the request not to cultivate too many isms and to cultivate conditions that will go across to the rest of the profession are important points. There is no doubt that a great deal of the difficulty with which we contend lies in the fact that so many of our communications do not quite speak the language of the profession. It is just there, I believe, that a certain neighborly mutual advice on the part of THE JOURNAL and the specialists and practitioners may lead to a more congenial and profitable discussion of those topics than has occasionally been the fate of the practitioner, the specialist and undoubtedly also of the general man. With this discussion and with the fact that psychiatry has come as a special topic into the program of the Council, a definite step has been taken, but it is only the first step; let us follow it up.

(To be continued)

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Society News.—Dr. Arthur W. Ralls, Gadsden, addressed the Madison County Medical Society, February 10, on "Diagnosis and Treatment of Peptic Ulcer." Dr. James B. Laughlin, Huntsville, addressed the society, March 10, on "Pyelitis in Children."——A county health unit was recently organized in Butler County.——Dr. James L. L. Bibb, Chattanooga, Tenn., addressed the Jackson County Medical Society, January 5, at Scottsburg, on "Pneumonia and Its Treatment."

CALIFORNIA

Gift for New Medical School at Stanford.—An anonymous donor has given $2,500,000 to Stanford University, it is reported, for the construction of a new medical building in San Francisco to replace the present structure. The gift was contingent, it is said, on the university's raising $1,250,000 as an endowment.

On Probation for Advertising.—At a meeting of the State Board of Medical Examiners in Los Angeles, February 4, Dr. Assad Simon Abdun-Nur was placed on probation for five years. Oct. 22, 1930, he was found guilty of advertising in violation of section 14 of the medical practice act. He has been operating "La Verdadera Clinica General," under the name "Los Angeles Clinic and Hospital Association." He graduated from Northwestern University Medical School, Chicago, in 1910.

Society News.—Dr. George H. Kress discussed legislative measures before the Los Angeles County Medical Association, April 2; Dr. Edgar Mayer, Saranac Lake, N. Y., spoke on "Present Developments in the Treatment of Tuberculosis," and Dr. Mark Albert Glaser discussed cranial and cerebral trauma with their sequelae.——A symposium on the gallbladder was conducted before the San Francisco County Medical Society, April 14, by Drs. Pleasant A. Taylor, Alanson Weeks, Guillaume D. Delprat and Charles C. Fulmer.

COLORADO

Society News.—Dr. Winthrop E. Blanchard, Denver, gave an illustrated address on surgery of the stomach, March 11, before the Boulder County Medical Society, and Dr. John S. Chase, Jr., Denver, gave an illustrated lecture on physical examination of air pilots. Dr. John Andrew, Longmont, gave a demonstration of special dressings for surgical wounds.

DELAWARE

Society News.—Dr. Emil Novak, Baltimore, addressed the March meeting of the Sussex County Medical Society at Georgetown on "Uterine Bleeding of Middle Life."

Bill Introduced.—S. 116 proposes to accord hospitals treating persons injured in accidents liens on any judgments, settlements or compromises obtained by such injured persons by reason of such injuries.

ILLINOIS

Society News.—An all-day clinical meeting was held by the Adams County Medical Society at Quincy, April 13; the morning program consisted of a skin clinic by Dr. John R. Pollock; a paper on otitis media and its complications, Dr. Walter D. Stevenson; presentation of cases of hyperthyroidism, Dr. Warren F. Pearce, and patients and case reports on perforated gastric ulcer, Dr. Arthur H. Bitter. In the afternoon, Dr. Edmund B. Montgomery presented "Results of Whitman's Method of Treating Fractures at the Neck of the Femur"; Dr. Thomas J. Merar, "Coronary Occlusion"; Dr. Harold Swanberg, "Preradium Treatment of Carcinoma of the Cervix," and Dr. Frank Cohen, "Early Diagnosis of Pregnancy by Animal Injection." All the physicians were from Quincy. ——Dr. Lee O. Frech, Decatur, addressed the Taylorville Physicians' Club, March 25, on "The Economic Phase of Medicine." ——Dr. Joseph E. Bellas, Peoria, addressed the Fulton County Medical Society, March 19, on fractures. ——Dr. Earl R. Chamness, Carlinville, addressed the Greene County Medical Society recently on "Symptoms and Diagnosis of Acute Abdominal Pathology."——Dr. Gladys Dick, Chicago, addressed the Lee County Medical Society, March 24, on "Practical Results in the Control of Scarlet Fever." Dr. Paul L. Schroeder, Chicago, spoke on juvenile behavior.——Frederick F. Molt, D.D.S., Chicago, addressed a joint meeting of the Decatur Medical Society and the Macon-Moultrie Dental Society, March 31, on "Oral Radiographic Technic and the Interpretation of Oral Radiograms."——Dr. Paul A. Isherwood, West Chicago, addressed the DuPage County Medical Society recently at Glen Ellyn on "Relations of the Coroner and Physician."——The Mercer County Medical Society was addressed at Aledo, April 14, by Drs. William H. Holmes and Paul B. Magnuson, Chicago, on nephritis and common fractures, respectively. —— Dr. Edwin P. Sloan, Bloomington, addressed the Douglas County Medical Society recently on "Hospital Organization, Formation of Staff and Medical Ethics."

Chicago

Tumor Clinic Established.—A tumor clinic has been established at Mercy Hospital for the study and treatment of malignant diseases. The clinic is equipped with facilities for diagnosis, short wave x-ray apparatus and a radium laboratory. At present it meets twice a week, Tuesday and Friday, at 10:30 a. m. Every case referred to the clinic will be carefully followed in order to obtain statistical material on end-results and to determine the best methods of treatment.

Society News.—At a meeting of the Chicago Heart Association, April 22, arranged by the committee on dispensary and hospital clinics, problems of heart disease in school children will be discussed by Miss Jane Neil and by Drs. Max P. Gethner, Nelson F. Fisher, Benjamin F. Feingold, Glencoe, Ill., and Carl Johnson. Dr. Louis N. Katz will speak on "The Michael Reese Project in Cardiovascular Research" and Dr. Emmet B. Bay, on "Organization of a Cardiac Clinic in a Teaching Hospital."

Jail Clinic Established.—Through the efforts of Chief Justice John P. McGoorty of the Criminal Court, it is reported, a new advisory behavior clinic has been established in the county jail for the purpose of aiding the judges in disposing of cases in which the mentality of the defendant is at issue. It is said to be the first clinic of its kind established in a jail. Dr. Harry R. Hoffman, assistant clinical professor of neurology at Rush Medical College, was appointed head of the clinic, April 1.

INDIANA

Summer Courses at Medical School.—The Indiana University School of Medicine, Indianapolis, will offer a six weeks' graduate course, beginning June 16, to medical practitioners in the state. Clinics will be held in dermatology, genito-urinary diseases, ophthalmology, rhinology, otology and laryngology, and surgery. The program will include biochemistry and pharmacology as applied to medicine, physical therapy and general pathology.

Society News.—Dr. Albert Murray DeArmond will give an illustrated address on "Chronic Subdural Hematoma" before the Indianapolis Medical Society, April 28; Dr. Daniel W. Layman will speak on "Pyogenic Infection of the Parotid Gland." As the guest of the Indiana State Tuberculosis Association, April 14, the society was addressed by Drs. William C. White, Washington, D. C., on "Latest Developments in Tuberculosis Research," and Kendall Emerson, New York, "Economic Stress and Tuberculosis." The society was also addressed, March 24, by Drs. David L. Smith on "Conduct of Labor in Borderline Pelves"; Walter F. Kelly, "Perineal Repair," and Foster J. Hudson, "Postpartum Care."——Dr. Robert W. Keeton, Chicago, addressed the Tippecanoe County Medical Society, April 9, on "Recent Advances in Endocrinology."

IOWA

Bills Introduced.—S. 393 proposes to define podiatrists as "persons who publicly profess to be podiatrists or who publicly profess to assume the duties incident to the practice of podiatry or who publicly profess to treat ailments of the human foot; persons who diagnose or give medical or surgical treatment to ailments of the human foot." S. 392 proposes to require applicants for a license to practice podiatry to have graduated from an approved school of podiatry, giving a three years' course.

KENTUCKY

Community Meeting.—Dr. Charles Robert Slater, Erlanger, was the guest of honor at a community meeting, March 24, celebrating the fiftieth year of his practice of medicine and his seventy-first birthday. Congratulatory addresses were made by Drs. Philip E. Blackerby and Arthur T. McCormack, Louisville; Henry C. White, Josiah G. Furnish, Clifford N. Heisel and Robert Lee Bird, Covington, and John Hadley Caldwell, Cincinnati; O. M. Rogers, Erlanger attorney, and the Rev. R. D. Martin, Erlanger. Dr. Slater opened his offices in Erlanger, now a town of 1,800, when it had less than 100 inhabitants.

MAINE

Bill Enacted.—H. 986, amending the pharmacy practice act, requires (1) all applicants for licenses to practice pharmacy to have graduated from a recognized school of pharmacy and to have had at least one year's experience in a pharmacy, (2) to accord licenses by reciprocity to applicants who have been registered in some other state with standards equal to those of Maine, and (3) to require the annual registration of every pharmacy.

Bill Introduced.—S. 451, to amend the state anatomical act, proposes (1) that, when no medical schools of the state are in active operation, the superintendents of the Bangor State Hospital, of the Augusta State Hospital, of the Eastern Maine General Hospital, of the Maine General Hospital and of the Central Maine General Hospital shall constitute the state anatomical board and (2) to make it lawful for unclaimed bodies to be used for the promotion of medical education, which shall be construed to include nursing training and premedical education.

Society News.—Dr. Blinn W. Russell, Lewiston, spoke on "Hemophilia" before the Androscoggin County Medical Society, February 4; Dr. Henry Sprince on "Some Recent Developments in Gynecology," and Dr. Roscoe L. Mitchell presented a "Survey of the Recent Poliomyelitis Epidemic"; Dr. George W. Holmes, Boston, addressed a recent meeting of the society on "X-Ray Treatment of Tumors." —— Among others, Drs. Erastus E. Holt, Jr., and Sylvester Judd Beach, Portland, addressed the Cumberland County Medical Society, February 27, on "Retinal Arteriosclerosis, Ocular Tuberculosis, Strabismus."——Dr. Soma Weiss, Boston, addressed the Penobscot County Medical Society, February 17, on "Clinical and Laboratory Aspects of Diseases of Blood and Circulatory System."

New England Health Institute, April 20-23.—The New England Health Institute will be held at the Eastland Hotel, Portland, April 20-23. The program includes addresses by Dr. Walter T. Harrison, U. S. Public Health Service, on "Advantages of Toxoid in Diphtheria Prophylaxis"; Dr. Earl D. Bond, Philadelphia, "Prevention of Insanity"; Dr. Matthias Nicoll, Jr., White Plains, N. Y., "Maternal Mortality and Prenatal Care"; Dr. Thomas Parran, Jr., state health commissioner, Albany, N. Y., "Report of the New York Health Commission"; Dr. Joseph Smith, Providence, R. I., "Protein Reaction in Smallpox Vaccination"; Frederick L. Hoffman, Newark, N. J., "Some New Aspects of the Cancer Problem"; Dr. Robert B. Kerr, Manchester, N. H., "Health Education of

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the School Child"; Dr. LeRoy M. S. Miner, Boston, "Preventive Dentistry in the Young"; Dr. George W. McCoy, Washington, D. C., "Contributions to Preventive Medicine from the National Institute of Health," and Charles-Edward Amory Winslow, D.P.H., New Haven, "Public Health Problems in Europe and the United States."

MASSACHUSETTS

Free Medical Service in Boston.—Four agencies in Boston will provide free domiciliary medical service during the current year to families who are unable to pay the fee of a physician, as a result of the efforts of the Boston Health League. Each agency will provide service for its own geographic district. The Boston Dispensary will treat persons too sick to travel to a clinic; its service is not intended for emergencies. The Jamaica Plain Dispensary will treat medical and minor surgical cases; maternity cases are referred to the hospital. The Massachusetts Memorial Hospital will care for obstetric cases from any part of Boston, and medical cases in its own district. In the Medical Mission Dispensary, general service will be given to families referred by overseers of public welfare, any member of the Boston Council of Social Agencies, any minister or priest, or by public schools.

MICHIGAN

Society News.—The annual meeting of the Michigan Association of Industrial Physicians and Surgeons will be held at the Statler Hotel, Detroit, April 23-24. Included in the program will be Drs. Emory W. Sink, Ann Arbor, "The Scope of Industrial Hygiene"; Emery R. Hayhurst, Columbus, Ohio, "Dangerous Employment"; Ferris Smith, Grand Rapids, "Plastic Surgery of Scars"; Bradley L. Coley, New York, "Relationship of Trauma to Bone Tumors."

Eye Clinic for Children.—The first of a series of clinics in Mecosta County to treat children with defective vision was opened in the Big Rapids courthouse, March 27. When the clinic leaves Big Rapids, it will visit Remus, Morley and Barryton. Dr. Sara K. D. Schweinsberg, formerly of Philadelphia, is directing the work, which is sponsored by the Children's Fund of Michigan. It is reported that the fund will furnish glasses free to children of indigent parents.

Another Health Unit.—At a meeting of the board of supervisors of Ontonagon County, February 17, a resolution was adopted whereby the position of county health commissioner was created. A sanatorium board of trustees for the county tuberculosis sanatorium was also created, to be composed of six members who shall serve without pay. It was also resolved that the practice of sending indigent patients to the state hospital at Ann Arbor be restricted and placed in the hands of the newly created agencies.

Bills Introduced.—H. 357 proposes to amend the medical practice act in various respects. Among other things, it proposes to require annual registration and the payment of an annual fee of $2 by licentiates. It proposes also to define "unprofessional conduct," which is cause for the revocation of licenses, to include (1) wilful neglect by licentiates to perform their duties as physicians, (2) insanity or feeblemindedness of licentiates, (3) unfitness of licentiates to perform their duty as physicians and (4) such additional actions as in the opinion of the board constitute "unprofessional and dishonest conduct." It also proposes to require the registration of licenses in all counties where licentiates reside or practice. H. 369 proposes a new state narcotic act.

MINNESOTA

Bill Introduced.—H. 1386, to amend the basic science act, proposes that its provisions shall not apply to any physician and surgeon who by reason of a revocation of his license was prevented from making application to the basic science board at the time act went into effect.

State Medical Meeting at Minneapolis, May 4-6.—The seventy-eighth annual meeting of the Minnesota State Medical Association will be held at Minneapolis, May 4-6, with headquarters at the Nicollet Hotel. Tuesday morning will be devoted to a symposium on obstetrics. There will be symposiums on diagnosis and therapy, Wednesday, morning and afternoon. Out of town speakers will include Dr. George Gray Ward, professor of obstetrics and gynecology, Cornell University, New York, who, as George Chase Christian Memorial lecturer, will speak on "Carcinoma of the Uterus," and Dr. Drew William Luten, assistant professor of clinical medicine, Washington University School of Medicine, St. Louis, "Disease of the Heart with Special Reference to the General Practitioner." An afternoon of clinics will feature the meeting, Tuesday. The annual banquet of the woman's auxiliary and the association will be held, Tuesday evening, at the Nicollet Hotel. Following a precedent set last year, the Southern Minnesota Medical Society will present a gold medal for the best individual contribution to the exhibits.

MISSOURI

Practitioners Honored.—The February 26 meeting of the Chariton County Medical Society, Salisbury, was in honor of four active members. The physicians are Drs. William B. Lucas, Mendon, aged 74, who has practiced fifty-one years; Dr. James D. McAdam, Prairie Hill, 73, who has practiced fifty years; Dr. Charles D. Stratton, Rothville, aged 73, who has practiced forty-eight years, and Dr. August W. Zillman, Keytesville, aged 72, who has practiced forty-four years. The four guests of honor were each presented with an album autographed by members and guests present. The scientific program was given by Drs. James R. McVay, Kansas City, who spoke on "Cancer of the Rectum"; Frank J. Tainter, St. Charles, "Diagnosis of the Acute Abdomen," and August A. Werner, St. Louis, "Hypovarism."

NEW YORK

Osteopaths Defeated.—A bill to amend the medical practice act to permit osteopaths to perform minor surgery and to administer anesthetics was defeated in the assembly, March 24, by a vote of 81 to 55. The senate had approved the measure, 44 to 6. The bill as introduced provided that a license to practice osteopathy should not entitle the holder thereof "to perform any surgical operation involving the opening of a natural body cavity, for the removal of cancer, for the amputation of an extremity or an appendix, or for the removal of any gland or organ, or part thereof of the human body" (THE JOURNAL, March 7, p. 781).

Personal.—Dr. Victor W. Bergstrom, who was on the staff of the state health department for seven years, resigned recently to become director of the Binghamton City Hospital and Kilmer Pathological Laboratories, Binghamton.——A certificate commemorating the completion of fifty years in the practice of medicine was recently presented to Dr. Silas J. Banker, Fort Edward, by the Washington County Medical Society.——The eightieth birthday of Dr. Charles Stover, Amsterdam, was observed at a special meeting of the medical staff of the Amsterdam City Hospital, February 28. Dr. Stover, who has practiced medicine in the city for fifty years, was president of the Medical Society of the State of New York in 1910.

Department of Public Health Nursing at Syracuse University.—With the assistance of the Milbank Memorial Fund, Syracuse University College of Medicine, Syracuse, opened in February a department of public health nursing. The course, for which a certificate will be given, requires two semesters of college work and experience in the field. Courses are offered in public administration, preventive medicine, mental hygiene, public health nursing, its organization and administration, and work in special fields such as child hygiene, school nursing and industrial nursing. Prerequisites are graduation from an accredited high school and from an accredited school of nursing. The school of nursing must have provided experience in general medical and surgical care of men and women, and obstetric and pediatric nursing. Ellen L. Buell is director of the department.

New York City

Speech Clinic at City College.—A speech clinic was recently opened by the public speaking department of the College of the City of New York as an experiment, under the direction of Victor Kleinfeld. Its purpose is to aid "speech defectives" in passing the required work.

Personal.—Dr. Peter J. Johnson was appointed medical superintendent of Cumberland Street Hospital, Brooklyn; Dr. Leon Izgur, medical superintendent of Greenpoint (N. Y.) Hospital, and Dr. Charles D. Crandall, deputy medical superintendent of Kings County Hospital, in orders recently issued by the commissioner of hospitals.——Dr. Fred H. Albee has recently been elected president of the Association of Surgeons of the Pennsylvania Railroad.

Clinical Lectures for Physicians.—Courses of four clinical lectures on communicable diseases will be given by the medical staff of Willard Parker Hospital each week beginning May 5. They will include talks on scarlet fever, diphtheria, measles and one lecture by Dr. William H. Park on "Clinical Bacteriology and Serology of the Communicable Diseases" and will be open to physicians in the city without charge on application to Dr. Dora M. Tolle, medical superintendent of the hospital.

Rare Books on Display.—Rare publications from the collection of the Medical Society of the County of Kings are on display in the society's library. Copies of a first edition of Jenner's work announcing the discovery of smallpox, published in London in 1798; the first medical book by an American author, "Plain Concise Practical Remarks on the Treatment of Wounds and Fractures," by John Jones, M.D., professor of surgery in King's College, New York, published in Philadelphia, 1776, and the first medical dictionary, 1486 edition, published in Venice, of Simon Januensis, are among the exhibits. Others include the first medical book published in the American colonies, the first American medical journal, the first medical book illustrated with woodcuts and the first anatomic work with copperplates.

NORTH CAROLINA

Society News.—Dr. Henry Kennon Dunham, Cincinnati, addressed the Guilford County Medical Society, High Point, February 5, on medical teaching in the field of tuberculosis. ——Dr. W. Z. Bradford read a paper on recent advances in the treatment of eclampsia before the Mecklenburg County Medical Society, Charlotte, February 2; Dr. C. S. Mangum, Chapel Hill, addressed the society, March 17, on "Old and New Brains and Their Significance in Clinical Medicine."

Dedication of Duke University School of Medicine.—Formal dedication of the Duke University School of Medicine and the Duke Hospital, Durham, will take place April 20. The ceremonies will begin with a morning session at which Dr. David Linn Edsall, dean, Harvard University Medical School, will make the dedicatory address. At a luncheon in honor of the delegates from other institutions and invited guests, Dr. Lewis Hill Weed, professor of anatomy and director of the Johns Hopkins School of Medicine, will speak on medical education, and Dr. Watson S. Rankin, director of the division of hospitals of the Duke Foundation, on hospitalization. A portrait of Dr. William Stewart Halsted is to be unveiled in the amphitheater of Duke Hospital, in the afternoon, when guests will also inspect the buildings. Dr. William Henry Welch, Baltimore, will be the principal speaker at an evening meeting, on "Medical Education and Research." At this session also the ceremony of naming the wards of Duke Hospital for distinguished physicians and surgeons (THE JOURNAL, February 14, p. 537) will be conducted by Dr. Wilburt Cornell Davison, dean of the school of medicine.

OHIO

State Medical Meeting at Toledo, May 12-13.—The eighty-fifth annual meeting of the Ohio State Medical Association will be held at Toledo, May 12-13, with headquarters at the Secor Hotel, and under the presidency of Dr. Chester W. Waggoner, Toledo. Motion pictures with sound will be given, Wednesday, on "Experimental Gastro-Enterostomy," "Repair of Urethrocele, Cystocele and Lacerations of the Cervix," and "Repairs of Second and Third Degree Lacerations of the Perineum and Rectocele." Guest speakers will include Drs. Joseph C. Aub, Boston, on "The Normal Diet"; Harry M. Hall, Wheeling, W. Va., "The Doctor and Immortality"; E. Starr Judd, Rochester, Minn., President Elect, American Medical Association, "The Practice of Medicine," and Meyer Wiener, St. Louis, "The Eye in Its Relation to Endocrines." Drs. Temple S. Fay, Eugene P. Pendergrass and Nathaniel W. Winkelman, Philadelphia, will present a symposium on head injuries and their sequelae; roentgenographic findings, pathologic findings, and newer methods. There will be a symposium on the tonsils, Wednesday, conducted by local physicians. A series of clinics are being arranged by the Academy of Medicine of Toledo and Lucas County for Monday. The annual tournament of the Ohio State Medical Golfers' Association will be held, Monday, at the Inverness Country Club, followed by a banquet.

PENNSYLVANIA

Chiropractors Refused Injunction.—The Supreme Court of the United States declined to review the case of *Long et al. v. Metzer et al.*, recently decided by the Supreme Court of Pennsylvania. Long and other chiropractors sought to enjoin the State Board of Medical Education and Licensure of Pennsylvania from prosecuting them for violating the medical practice act. They contended, in effect, that since no specific provision existed in Pennsylvania for licensing chiropractors, they were entitled to practice without licenses. The Pennsylvania court refused to grant the injunction, pointing out that the chiropractors were merely attempting to relitigate controversies already determined against them and that the Pennsylvania courts had already held that the term "practice of medicine" as used in the medical practice act included the practice of chiropractic. The action of the United States Supreme Court places the matter beyond further controversy.

Bills Introduced.—H. 1399 proposes that a drug shall be deemed to be misbranded "if the label on the package shall bear any name or title specified and recognized by the tenth revision of the Pharmacopeia of the United States, the fifth edition of the National Formulary or the American Homeopathic Pharmacopeia and such title or name is prefixed or suffixed by any trade or manufacturers' name." H. 1365 proposes to make it unlawful for any person licensed to practice any healing art to advertise special inducements or fixed prices for any services, appliances or materials which are a necessary adjunct to such professional services. H. 1389 proposes to provide that whenever a certificate as to ocular conditions or visual efficiency is required by any state law a certificate of a duly licensed optometrist shall be accepted. H. 1431 proposes to create a board of optometrical examiners and to regulate the practice of optometry.

Philadelphia

The Thomas Urologic Lecture.—Dr. John R. Caulk, St. Louis, delivered the first B. A. Thomas Urological Lecture of the Philadelphia Urological Society at Philadelphia, February 23, on "Instrumental Treatment of Prostatism." This lectureship was established by the late Dr. B. A. Thomas of Philadelphia, who gave to the society a fund for the purpose.

Society News.—Dr. Florence R. Sabin, New York, addressed the Pathological Society of Philadelphia, April 17, on "Cellular Studies in Tuberculosis."——Dr. Frederick A. Willius, Rochester, Minn., addressed the tenth annual meeting of the Philadelphia Heart Association, April 15, on "Problems Underlying the Prevention of Heart Disease."——Dr. Basil R. Beltran spoke on injection treatment of varicose veins at the weekly seminar of the Philadelphia County Medical Society, April 10.——Dr. John B. Deaver, among others, addressed the Philadelphia Academy of Surgery, April 6, on carcinoma of the uterus.——Dr. Francis V. Gowen, among others, presented a paper on "Scarlet Fever Sinusitis" before the Philadelphia Laryngological Society, April 7.

SOUTH CAROLINA

State Medical Meeting at Greenville, May 5-7.—At the annual meeting of the South Carolina Medical Association, Greenville, May 5-7, under the presidency of Dr. Kenneth M. Lynch, Charleston, the guest speakers will be Drs. John A. Kolmer, Philadelphia, on "Practical Application of Vaccine Therapy in the Prophylaxis and Treatment of Disease," and Dean Lewis, Baltimore, "Surgical Lesions of the Stomach and Treatment." There will be a symposium on psychiatry, May 6, and one, May 7, presented by the Urological Society of South Carolina. A new feature will be special clinics at various hospitals. Many papers will be delivered by South Carolina physicians. Entertainment will include a dance at the Poinsett Hotel in honor of the president. Allied societies and college alumni will hold their annual luncheon at noon Wednesday. The woman's auxiliary will also meet at this time.

TENNESSEE

Personal.—Dr. Kirby S. Howlett, Franklin, recently celebrated the fiftieth anniversary of his practice of medicine; he was president of the Tennessee State Medical Association in 1929.——Dr. William C. Sanford has been appointed director of the Bradley County health unit to succeed Dr. Horace M. Roberson, Cleveland, resigned.

Health at Nashville.—Telegraphic reports to the U. S. Department of Commerce from eighty-one cities with a total population of 36 million, for the week ended April 4, indicate that the highest mortality rate (23.1) appears for Nashville, and the rate for the group of cities as a whole, 13.1. The mortality rate for Nashville for the corresponding week last year was 24.7, and for the group of cities, 13.5. The annual rate for the eighty-one cities for the fourteen weeks of 1931 was 14, as against a rate of 13.3 for the corresponding weeks of 1930. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits, or that they have a large Negro population may tend to increase the death rate.

Society News.—Dr. Shields Abernathy, Memphis, addressed the Giles County Medical Society, Pulaski, March 26, on lesions of the cervix.——The Tri-County Medical Society, including

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Lake, Dyer and Crockett counties, had as a speaker, April 1, at Dyersburg, Dr. Benjamin F. Turner, Memphis, on "Relation of the Autonomic Nervous System to Internal Medicine and Surgery."——Drs. Burton D. Haseltine, Alvin W. La Forge, John S. Ashby, all of Chicago, and Dean W. Myers, Ann Arbor, Mich., presented a symposium on asthma before the Knox County Medical Society, Knoxville, March 15.——Drs. Russell K. Hollingsworth and Samuel T. Parker addressed the Madison County Medical Society, Jackson, in February, on regional anesthesia in reduction of fractures and dislocations, and on chronic suppurative otitis media, respectively.——Dr. Bransford Lewis, St. Louis, addressed the Nashville Academy of Medicine, March 31, on "Movable Kidney."

WEST VIRGINIA

Personal.—Dr. Turner E. Cato, Greenville, has been elected health officer of Hancock County, succeeding Dr. James E. Fisher, New Cumberland, who resigned recently.——Dr. William G. C. Hill, Cameron, was recently named health officer of Marshall County, where the county health unit was resumed after two years' suspension.

Society News.—Drs. Russel Kessel and John R. Shultz, Charleston, addressed the Raleigh County Medical Society, Beckley, March 19, on "Berger's Disease" and differential diagnosis of pathologic conditions of the abdomen, respectively.——Dr. Granville S. Hanes, Louisville, Ky., addressed the Kanawha County Medical Society, Charleston, March 3, on "Diseases of the Terminal Bowel and Relation of the Disturbance to the Tract Above."——Dr. Willie H. Howell, Morgantown, presented a paper on "Open Treatment of Fractures" before the Monongalia County Medical Society, March 3.——Dr. Clifton J. Reynolds, Bluefield, among others, addressed the Mercer County Medical Society, March 19, on "Urinary Calculi."——Dr. Charles A. S. Williams, Marietta, Ohio, read a paper on cancer before the Tyler-Wetzel Bi-County Medical Society, New Martinsville, March 12.

State Medical Meeting at Clarksburg, May 19-21.—The annual meeting of the West Virginia Medical Association will be held, May 19-21, at Clarksburg, with headquarters at the Stonewall Jackson Hotel and under the presidency of Dr. Cyrus H. Maxwell, Morgantown. Among guest speakers will be Drs. William H. Mayer, Pittsburgh, who will speak on "The Nervous Patient and the Practitioner"; James E. Paullin, Jr., Atlanta, "Treatment of Hypertension"; Grover C. Weil, Pittsburgh, "Cultivation and Preparation of Maggots for the Treatment of Osteomyelitis and Other Wound Infections"; Charles L. Scudder, Boston, "Fractures"; Clarence H. Smith, New York, "Infections of the Petrous Pyramid"; Waitman F. Zinn, Baltimore, "Cancer of the Larynx"; Ray Blankinship, Madison, Wis., "Medical Aspects of Jaundice," and Samuel McC. Hamill, Philadelphia, pediatrics and public health. The oration on surgery will be given by Dr. Robert U. Drinkard, Wheeling, and the oration on medicine by Dr. George H. Barksdale, Charleston. Dr. Hugh Cabot, Rochester, Minn., will be the speaker at the annual banquet, which will be followed by a dance at the Stonewall Jackson Hotel.

WISCONSIN

Bill Introduced.—A. J. R. 83 proposes that property owned by religious, scientific, literary, educational, benevolent, historical and fraternal organizations may be taxed at a rate lower than that imposed on other property.

GENERAL

Substandard Ether Confiscated.—Destruction of 120,000 cans of substandard and adulterated ether by the United States marshal at Elizabeth, N. J., was recently announced by officials of the Food and Drug Administration. This ether was a residue of wartime stock originally bought by the army for medical use, but tests had proved it to be highly acid and therefore adulterated. It was sold five years ago to a chemical firm with an understanding guaranteed by a bond that it would not be used as an anesthetic. The purchaser is said to have violated the bond, whereupon the government confiscated the supply and set fire to it at the city dump in Elizabeth.

Meeting of National Tuberculosis Association.—The twenty-seventh annual meeting of the National Tuberculosis Association will be held at the Hotel Syracuse, Syracuse, N. Y., May 11-15. There will be a symposium, Tuesday, on allergy and immunity, and one on acid-fast bacilli, Wednesday. The clinical section will conduct a symposium, Tuesday morning, on bronchiectasis and lung abscess, and the clinical and pathologic sections a joint one, Wednesday afternoon, on the x-rays and tuberculosis. Among others participating in symposiums will be Drs. Arnold R. Rich, Baltimore; Hans Zinsser, Boston; Eugene L. Opie, Philadelphia; Esmond R. Long, Chicago; Florence R. Sabin, New York; Stuart Pritchard, Battle Creek, Mich., and Louis H. Clerf, Philadelphia. Papers will be delivered, among others, by Drs. Bruce H. Douglas, Northville, Mich., and Max Pinner, Tucson, Ariz., on "Pathogenesis of Sub-Apical Lesions"; Alexius M. Forster, Colorado Springs, Colo., "Psychology of the Tuberculous Patient"; Charles C. Macklin, London, Ont., Canada, "The Dynamic Bronchial Tree," and William A. Hudson, Detroit, "Motor Phenomena of the Tracheobronchial Tree."

Society News.—Dr. Jesse R. Stamper, Shreveport, La., was elected president of the Tri-State Medical Association (Texas, Arkansas, Louisiana) at its recent annual meeting in Shreveport, succeeding Dr. James A. Daniels, Carthage, Texas; Drs. Richard G. Granberry, Marshall, Texas, and Harry E. Murry, Texarkana, vice presidents, and Dr. George Patrick Quinn, Shreveport, secretary-treasurer, succeeding Dr. Frank H. Walke, Shreveport, who held that position for fifteen years. The next annual meeting will be held in Texarkana, Ark.——Dr. Edwin Beer, New York, was elected president of the Clinical Association of Genito-Urinary Surgeons, which met, March 6-7, in St. Louis as the guests of Dr. John R. Caulk, Washington University School of Medicine. Operative clinics and demonstrations by Drs. Caulk, Joseph Hoy Sanford, Dalton K. Rose and Vincil R. Deakin comprised the program carried out in the urologic department of the university, which has recently been newly equipped through a gift from John F. Queeny and his son, Edgar Queeny, St. Louis. Dr. Henry G. Bugbee, New York, was reelected secretary of the association.——The American Academy of Ophthalmology and Otolaryngology will meet, September 14-19, at French Lick, Ind.——National Hospital Day will be observed, May 12.——The National Congress of Parents and Teachers will hold its annual meeting, May 3-7, at Hot Springs, Ark.——Dr. Francis Carter Wood, New York, was elected president; Dr. Edward B. Krumbhaar, Philadelphia, vice president, and Dr. William H. Woglom, New York, reelected secretary and treasurer, of the American Association for Cancer Research at its meeting, April 1, in Cleveland. Dr. Ward J. MacNeal, New York, was elected president; Dr. Elexious T. Bell, Minneapolis, vice president; Frank B. Mallory, Boston, treasurer, and Howard T. Karsner, Cleveland, secretary, of the American Association of Pathologists and Bacteriologists, which met at the same time. Meeting concurrently in Cleveland were the American Association of Immunologists and the American and Canadian sections of the International Association of Medical Museums.——The Central Tri-State Medical Society (West Virginia, Kentucky and Ohio) will meet in Ashland, Ky., April 30. Drs. Walter C. Alvarez, Rochester, Minn., will speak on "Practical Points in the Treatment of Gastro-Intestinal Diseases"; Albert Graeme Mitchell, Cincinnati, "Indications for Tonsillectomy"; Irvin Abell, Louisville, "Surgical Treatment of Peptic Ulcer," and George A. Hendon, Louisville, "Life and Achievements of Louis Pasteur."

FOREIGN

Madame Curie Receives Cameron Prize.—Mme. Marie Curie, co-discoverer with her husband of the element radium, has been awarded the Cameron prize of the faculty of medicine of the University of Edinburgh for 1931 in recognition of the recent advances in medicine as a result of the discovery.

New Journal of Otolaryngology.—A new monthly journal, *Les Annales d'Oto-Laryngologie*, has recently appeared as the organ of La Société de Laryngologie des Hôpitaux de Paris. J. Ramadier and R. Causse are the editors. The first issue contains, in addition to original articles, the transactions of the society and thirty pages of abstracts from current literature.

Prize in Ophthalmology.—Announcement is made of the Middlemore Prize to be awarded for the best essay or work on any subject which the council of the British Medical Association may from time to time select in any department of ophthalmic medicine or surgery. The council is prepared to consider an award of the prize in 1932 for the best essay on "Sympathetic Ophthalmia Before and After 1914." Essays must reach the medical secretary, British Medical Association House, Tavistock Square, London, W. C. 1, not later than December 31. Each essay must be signed with a motto accompanied by a sealed envelop, marked on the outside with the motto, and containing the name and address of the author. If no essay is of sufficient merit, the prize will not be awarded in 1932.

Government Services

Tuberculosis Expert Wanted

The U. S. Civil Service Commission has announced that a vacancy exists in the position of physician qualified in tuberculosis in the regional office of the U. S. Veterans' Administration at Dallas, Texas. A man is desired for the appointment. The entrance salary is $3,800 a year. Higher-salaried positions are filled through promotion. Full information may be obtained from the secretary, Board of U. S. Civil Service Examiners, postoffice or customhouse in any city, or from the U. S. Civil Service Commission, Washington, D. C.

Changes in Veterans' Bureau Personnel

The March U. S. Veterans' Bureau Medical Bulletin notes the following recent changes in veterans' bureau personnel:

HOSPITALS

Dr. Samuel R. Baker, to Perry Point, Md.
Dr. John D. Brooks, to Excelsior Springs, Mo.
Dr. William J. Butt, appointed at Kansas City, Mo.
Dr. Herbert Caldwell, to Hines, Ill.
Dr. Emmet F. Casey, appointed at Hines.
Dr. Henry D. Causey, appointed at Portland, Ore.
Dr. James H. Chapple, to Sheridan, Wyo.
Dr. Leslie B. Crumrine, reappointed at Memphis.
Dr. Thomas S. Cusack, resigned at Bronx, N. Y.
Dr. Fred Danziger, appointed at Hines.
Dr. Joseph V. S. Daukszys, appointed at Excelsior Springs.
Dr. Aloysius N. J. Dolan, to Excelsior Springs.
Dr. Albert N. Earnest, appointed at Oteen, N. C.
Dr. Roscoe Etter, appointed at Hines.
Dr. Edward L. Foote, appointed at Bronx.
Dr. Harold E. Foster, to Boise, Idaho.
Dr. Lester R. Herman, appointed at Fargo, N. D.
Dr. Thomas R. Huffines, appointed at Oteen.
Dr. Howard B. Kellogg, appointed at Hines.
Dr. Benjamin Kesert, appointed at Hines.
Dr. Grover C. Kirk, to Lincoln, Neb.
Dr. David S. Levy, to Hines.
Dr. Stanton K. Livingston, reinstated at Hines.
Dr. Charles L. Magruder, to Lincoln, Neb.
Dr. David A. Morgan, to Excelsior Springs, Mo.
Dr. Howard P. Morgan, appointed at North Chicago.
Dr. Bennie A. Moxness, appointed at Perry Point, Md.
Dr. Malcolm Y. Marshall, appointed at North Little Rock, Ark.
Dr. Oscar L. Nelson, resigned at St. Cloud, Minn.
Dr. Tracy C. Owens, to Chillicothe, Ohio.
Dr. Granville H. Richards, resigned at Perry Point.
Dr. Frank M. Rogers, resigned at Chillicothe, Ohio.
Dr. John K. Ross, to central office.
Dr. Ferdinand Shoemaker, to Excelsior Springs.
Dr. Morris F. Stein, appointed at Hines.
Dr. Neville E. Stewart, to Fort Lyon, Colorado.
Dr. William J. Stutz, appointed at Hines.
Dr. Joseph Taymor, to Hines.
Dr. Victor F. Tremper, appointed at Hines.
Dr. Paul S. Wagner, appointed at Palo Alto.
Dr. Meigle Ward, to Boise.
Dr. William C. Williams, appointed at Hines.
Dr. Tom V. Willis, promoted to physician at Lake City, Fla.
Dr. John A. Wolfer, appointed at Hines.

REGIONAL OFFICES

Dr. William M. Blaud, appointed at Philadelphia.
Dr. Lacy W. Corbett, appointed at Boston.
Dr. Forrest J. Drury, appointed at Manchester, N. H.
Dr. Hiram M. Gallagher, appointed at San Francisco.
Dr. William E. Gardner, appointed at San Francisco.
Dr. Henry A. Kildee, appointed at Cincinnati.
Dr. Frederick Mayer, appointed at New York.
Dr. Joseph Marcovitch, appointed at Milwaukee.
Dr. Donald M. McRae, resigned at Los Angeles.
Dr. Edward M. Mead, appointed at central office.
Dr. Henry S. Mitchell, appointed at Baltimore.
Dr. Theodore Morris, to Cincinnati.
Dr. Levi Murray, appointed at central office.
Dr. Erle T. Newsom, appointed at New York.
Dr. Ira O. Park, resigned at Detroit.
Dr. Thomas R. Preston, status changed to full time at Hartford, Conn.
Dr. Eugene M. Trabue, appointed at Louisville.
Dr. Haworth Traver, appointed at Boston.
Dr. Edgar E. Travers, appointed at Charlotte, N. C.
Dr. John J. Ward, to Springfield, Mass.

CORRECTION

The Treatment of Secondary Anemia.—In the article by Drs. John H. Powers and William P. Murphy (THE JOURNAL, February 14), the statement is made under the heading "Methods of Study" that patients in the first group received iron in the form of pills of ferrous carbonate, U. S. P., 1.8 Gm. daily. A few sentences later the statement is made, "after which iron (1.8 Gm.) was administered in conjunction with the liver extract." The 1.8 Gm. refers to pills of ferrous carbonate, U. S. P. (Blaud's pills).

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 21, 1931.

Diet and Teeth

Prof. Edward Mellanby and his wife are well known for their experimental work on rickets and diet. Last year Mrs. Mellanby, as the result of research performed for the Medical Research Council, published "Diet and Teeth: An Experimental Study: Part I. Dental Structure in Dogs" (THE JOURNAL, March 8, 1930, p. 728). Her main conclusion was that the development of perfect teeth depended on an adequate supply of vitamin D. Part II has now been published and deals with dental structure in animals other than the dog, such as the rabbit and the rat, and with the experimental production of dental and periodontal disease. Part III is to come and will deal with the structure of human teeth and the part played by diet in the resistance they offer to disease. In part I the influence of specific elements of diet on the structure of dogs' teeth was described. In the present report it is shown that the periodontal structures are subject to similar influences; that immunity from periodontal disease is indirectly, and reaction to attrition directly, dependent on the presence in the diet of certain essential elements. Sound teeth depend on sound diet. If the diet is right, the teeth can be trusted to remain sound no matter what conditions prevail in the mouth. Rightness of diet means in the main a sufficient quantity of vitamins A and D. Deficiency of A leads to hypertrophy of the subgingival epithelium and subsequent invasion by pathogenic organisms; deficiency of D, to defects in alveolar bone. A significant fact is the importance of adequate diet in early life, when the teeth and periodontal tissues are developing. If a puppy's diet is deficient in vitamins A and D during the early months, it is liable to develop periodontal disease later, whatever the diet then. On the other hand, a perfect diet in the developing period either prevents or inhibits the production of periodontal disease later even if the diet is then deficient in vitamins A and D. General periodontal disease, including pyorrhea, was found to be controllable by diet; in fact it could be prevented or allowed to develop by specific dietetic treatment. Diet acts primarily by controlling the developmental structure of the periodontal structures and not by any direct or indirect effects concerned with bacterial decomposition in the mouth. Any external action of food in the mouth is of only secondary importance. Indeed, it was shown that a soft sticky diet containing abundant carbohydrate could be eaten by dogs, so long as it was of proper nutritional standard, for at least eight years, without the development of periodontal disease.

CARIES

Experimental results with regard to caries were equally negative as to local causation. Since carbohydrates, and especially fermentable carbohydrates, are generally thought to be the essential factors in modern civilization which have led to the prevalence of caries, a large bulk of sugar or starch was added to the food of some dogs, but no caries was induced. Living cultures of *Streptococcus mutans*, which some consider to be the organism chiefly concerned in the initiation of human dental caries, were added to the daily diet of dogs and were rubbed on the teeth or into artificial cavities after food had been eaten. Similar experiments were performed with *Bacillus acidophilus*, for which the same claim has been made. Caries was never produced, though in the dogs in which artificial cavities had been produced specific agglutinins appeared in the blood, which seemed to indicate that infection had taken place. Nevertheless the teeth showed no signs of caries after three years' feeding with the organisms.

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THE RESPONSE OF THE TOOTH TO ATTRITION

The response of a tooth to attrition appears to depend also on vitamin D. When the surface enamel is destroyed, the osteoblasts of the pulp become active and secondary dentin tubules are formed. If the diet contains plenty of vitamin D, much well calcified secondary dentin is produced; but, if this vitamin is deficient, poorly calcified secondary dentin or none at all is produced. The response is independent of the primary dentin in the teeth. In part III these results will be related to the human problem, for dental caries is another stimulus to the production of secondary dentin.

THE CALCIFICATION OF THE TEETH

Calcification of the teeth in rats and rabbits was found to depend on vitamin D just as much as it does on the dog. As these three animals have such different types of teeth, it seems that the calcification of all mammalian teeth is similarly controlled. With abundance of vitamin D in the diet, the teeth are properly formed. With a deficiency, the calcium-phosphorus ratio becomes a significant factor. Irradiation greatly improves calcification when the diet is deficient in calcifying properties.

Vacancies in the Army Medical Corps

Since the war there has been difficulty in recruiting the army medical corps. At one time admission was so valued that it could be obtained only by a difficult competitive examination. Now, although the examination has been dropped, the entrants are not sufficient to fill the vacancies. The reason given is that the inducements are not equal to those offered in civilian life. The pensions and pay have not been increased in correspondence with the fall in the value of money. It is not satisfactory to have to contemplate retiring at the age of 55 with a growing family and a pension of $2,750 per annum. It is then difficult for a man to start the career of civil practice. The present shortage is something of a vicious circle, for the forces abroad must have their quotas kept up, while substitutes can easily be obtained at home. The result is that the present officers are perpetually on foreign service. In addition to increased pay the reforms suggested are opportunities for research, specialist pay for those employed on specialist duties, and accelerated promotion for men of marked ability.

The Psychology of Suicide

As one of a series of lecture-discussions arranged by the National Council for Mental Hygiene, Dr. H. Crichton-Miller, director of the Tavistock Clinic for Functional Nervous Disorders, delivered an address on the psychology of suicide. He connected the considerable increase in the suicide rate in civilized countries with the decadence of religious authority and the power of dogmatic religion, which reduced the fear of consequences in the after life. The person who feared nothing except just floating into the unknown, having no convictions about the future life, and presumably few convictions about what was required of him in this life, considered the continuance of his own life from the point of view of comfort or discomfort, pleasure or displeasure, ease or disease. Naturally a large number of such people felt that they were better out of the world. Suicide was an escape from a situation of conflict which the individual felt was no longer tolerable. Such conflicts might be grouped under three heads: 1. The fears of frustration—fears that belonged to instinctive life; the fear of hunger, starvation or thirst, sex starvation, nonfulfilment of procreation. 2. The fears of ostracism—the herd fears of what people would say or do, how they would disparage, persecute, torment. 3. The fears that belonged to the future, particularly to the after life. The tremendous tide of suicides from the cause "crossed in love" must have something to do with civilization, for it did not belong to less evolved countries. Why should civilization make love of such predominant importance? Many factors entered into the question. One was that in a more highly organized culture both the man and the woman laid greater emphasis on the emotional side of mating and less on the parental side. Therefore they tended to differentiate much more exactly in their choice. In regard to people who took their own lives rather than face another death, the war furnished an example: an appreciable number of soldiers took their own lives. But the matter was different for the soldier on the battlefield; with him the great fear was often of an agonizing death. Dr. Crichton-Miller suggested that the phenomenon seen at present in civilized society was a lessening of the religious fear taking away the inhibitory factor, while social fears were becoming more accentuated than they had ever been.

An Eight-Hour Day for Nurses

In accordance with the general aims of the labor party, a labor member has introduced a bill into parliament to limit the work of nurses to eight hours daily. The inevitable reactions, which such ostensibly benevolent legislation must produce, receive from the labor party no more consideration than does the mischief of their other interferences with the freedom of the individual. While, with the developments of modern medicine, the cost of illness becomes greater and greater, the capacity of the middle classes to pay has become less. If an eight-hour day were enforced no one would be able to employ nurses in a case requiring constant attendance who could not pay for three. The College of Nursing, which comprises 28,000 nurses, has expressed strong disapproval of the bill, believing that it would degrade the profession.

PARIS

(From Our Regular Correspondent)

March 4, 1931.

Use of Extract of Pig Spleen in Urticaria

Addressing recently the Société des médecins des hôpitaux de Paris, Mr. Pasteur Vallery-Radot and Professor Blamoutier announced their results from the use of concentrated extract of pig spleen in urticaria, Quincke's edema and rebellious eczema. In ten cases of recurring urticaria, with or without Quincke's edema, they report six recoveries or marked ameliorations, two transitory and incomplete results and two failures. Of five subjects affected with chronic eczema, two were completely cured, while three were considerably improved; the latter have recurring attacks from time to time but these are much attenuated. The mode of action of the splenic extract in these dermatoses is still unknown. All that can be said thus far is that a concentrated extract of pig spleen, if repeatedly injected, may, in certain cases of urticaria, Quincke's edema and eczema, attenuate considerably the cutaneous manifestations or even cause them to disappear. Mr. Milian, however, expressed the view that the modern treatment of eczema, which was not tried, would have brought about a similar result. The use of splenic extract appeared to him hardly rational. Mr. Sézary secured ameliorations with splenic extract in eczemas but he failed to get results in a case of Hebra's prurigo. Pasteur Vallery-Radot, in closing, recalled the researches of Zumbusch and his pupils, which led to the treatment of the diseases of sensitization by means of splenic extract. But he recognized that the mechanism of the action of the extract remains hypothetical.

Influence of Hertzian Waves on Living Organisms

The alternating electric fields, which are created by the hertzian waves of the radio, have an insignificant value when one is some distance from the transmitting antennae, but they exert no influence on living organisms. But in employing very short waves, which are easily directed, and sufficient power, one may, when very near the transmitting apparatus, obtain

fields of several decades of volts per centimeter, sufficient to act on conducting bodies and to heat them. The living tissues being semiconductors are subject to this induction effect, and, if the necessary energy is applied, one can, without fire, roast a chicken on the spit. Professor d'Arsonval has recently demonstrated to the Academy of Sciences that, in a similar manner, therapeutic effects can be secured. He presented a communication of Mr. Saidman, director of the Institute of Actinology, and of Messieurs R. Cahen and J. Forestier. These investigators operated with waves of 15 meters, which produce an alternating field of 20 million periods per second. A mouse exposed to this field presented phenomena of respiratory acceleration and of sudation. Then the respiration became slower, and at the end of an hour the animal was dead. Mr. d'Arsonval and the authors think that treatment with short wavelengths has advantage over diathermy, as it allows better action on the deep-lying tissues. In neuritis, for example, the analgesic effect is frankly greater, and one does not risk the attacks of pain that are sometimes provoked by other methods.

Depositories for Convalescents' Serum

The recent epidemic of poliomyelitis in Alsace confirmed the value of the use of serum of convalescent persons for the curative and prophylactic treatment of the disease. It is one of the best means of checking epidemics. The value of convalescents' serum is established not only for poliomyelitis but also for measles, scarlet fever and pertussis. Dr. Loewenberg of Strasbourg has addressed an urgent appeal to the minister of health that there be established, in all the regional centers of bacteriology, depositories of serums of convalescents from these various diseases, collected in the children's hospitals. At present there are few such depositories and these are found only in some of the leading hospitals of the large cities. Dr. Loewenberg thinks that his plan would be easy to carry out, though it would be necessary to take account of the peculiarities of each of the serums. The serum of convalescents from poliomyelitis can be collected and utilized at any time, as the antibodies persist in the blood for years. It is different with other contagious diseases, more particularly measles, in which the blood must be taken between the seventh and the eleventh day, because it has at that time the maximal number of antibodies. It is evident, therefore, that such a depository would have to be carefully organized, but it would certainly play an important part in combating infectious diseases, especially measles and poliomyelitis. Mr. Loewenberg has himself succeeded in collecting at the Institut de bactériologie in Strasbourg a stock of various serums, thanks to the cooperation of Professor Borel and other colleagues, who have been so obliging as to authorize the collection of serums in their hospital service. The serums are placed, as far as possible, at the disposal of all practitioners. A reserve is kept on hand to combat epidemics that may arise in the day nurseries. To prevent the serum from being wasted, the supply is strictly reserved for the prophylaxis of children of preschool age and weakly children. The donors of blood receive compensation.

Medicine and Physicians in Morocco

Prof. Léon Bernard, on returning from an official mission to Morocco, presented, before the Academy of Medicine, the rôle of the medical profession in Morocco, its modes of activity and the many lines of endeavor that have been organized in the protectorate, under the inspiration of Marshal Lyautey. Morocco constitutes today the country in which sanitary organization is the most complete, as it has been created in a new country entirely de novo and has been placed, from the start, on the highest level of efficiency. The organization combines under one management medical aid and the prophylaxis of disease, and the same personnel has control over the hospitals, the work of ferreting out the contagious diseases and the measures adopted to prevent their dissemination. The management of the public health service exerts, with his technical personnel, a central control over the whole organization. The whole field has been subdivided into regions, each with its chief physician at the head. There are seventeen bureaus of health in the large cities, and seven maritime sanitary agencies in the ports. In addition, there are fourteen mobile sanitary groups, termed sometimes "flying squadrons," and four prophylaxis crews, which work chiefly among the most distant and most scattered populations. There are 171 hospitals, infirmaries or dispensaries in the urban centers and the rural sections. Bernard described some of the types of maternities, frontier health stations and dispensaries, spoke of the Institut d'hygiène in Rabat, and gave an account of the results secured in the various sanitary activities, showing the widespread penetration of medical ideas among the populations and calling attention to the gratitude shown by the people toward the physicians. In paying his respects to the medical profession of Morocco, past and present, Bernard emphasized the esteem in which it was held by Marshal Lyautey and praised the work accomplished in Morocco by that eminent organizer. The entire academy joined in his expression of admiration for Marshal Lyautey and decided to transmit a copy of the report to the marshal.

Financial Difficulties of the American Hospital

The American Hospital at Neuilly, created at the gates of Paris, which, at the close of the war, took over the work undertaken by the American ambulance corps, was founded in memory of the American soldiers who died on French soil. It is having at present some difficulty with the financial situation, and there was a rumor that it would be forced to close. Dr. Edmund Gros, the chief physician, has stated in an interview to the press that the rumor is unfounded, but he admitted that the conditions required the securing of additional funds. The present crisis is only the repercussion of the widespread world depression. The proportion of poor patients cared for at the Neuilly hospital ranges from 40 to 60 per cent. The number of wealthy patients has decreased, and the receipts from them no longer suffice to cover the deficit. From time to time, the hospital is forced to make appeals to the generosity of the public. No appeal, however, has been made during the past three years; but an appeal will become necessary, this year, in June. "At present," Dr. Gros stated, "we are asking all Americans who have enjoyed the advantages of the American Hospital to remember us, and we shall no doubt secure gifts amounting to $300,000, which sum is needed to cover the deficit and to provide the necessary funds for a few years before another appeal is made. Our financial condition is not exceptional. All the American hospitals that have undertaken the same task are facing at present the same situation." The American Hospital at Neuilly is well organized and is highly esteemed by the general public and by the medical profession of France. Its personnel consists of an equal number of French and American physicians, most of whom have diplomas from both France and the United States. The hospital admits patients of all nationalities, and renders valuable service in that it cares for nearly all the victims of industrial and automobile accidents occurring in the vicinity.

The Colonial Medical Convention

During the International Colonial Exposition, which opens in Paris, May 1, 1931, a week will be devoted to medical meetings. The topics on the program are: July 22, native children (protection, hygiene, puericulture). July 23, anopheles and stegomyia; alimentation, drinking waters, intestinal parasites. July 24, immigration in warm countries; maritime sanitary

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police work; cutaneous and venereal diseases in warm countries (particularly, leprosy and syphilis). July 25, transmission of common diseases to man and to animals; treatment of trypanosomiasis; history of sanitary aviation; its utilization in the colonies; rôle of sanitary planes in the functioning of medical aid for the colonies. July 26, practical demonstration of sanitary aviation by "Les amis de l'aviation sanitaire." July 27, sanitary aviation in French West Africa and in Indo-China; plans for cooperation between sanitary aviation and the colonial air transport lines; colonial pharmacology. July 28 and 29, sanitary protection of natives in overseas possessions; medical aid, organization, personnel, results secured and contemplated. July 30, mineral springs and climatic resorts in the French colonies; surgery and specialties; cancer in the French colonies.

BELGIUM

(From Our Regular Correspondent)

March 1, 1931.

International Congress of Physical Therapy

The first International Congress of Physical Therapy was held at Liége, twenty-five years ago, and after the lapse of twenty-five years the same persons served on the organization committee of the fifth international congress, also held at Liége (Sept. 14-18, 1930). The congress was divided into five sections: kinesitherapy, radiology, hydrology and climatology, electrotherapy, actinology. There was also a section in which questions of a general nature were discussed; notably, instruction in physical therapy. The following resolution was adopted:

1. Physical therapy occupies in the training of physicians an equal place with surgery and pharmacology. The training should be both theoretical and practical—in the form of courses and practical exercises.

2. Physical therapy should be an obligatory course of instruction for at least two clinical semesters and should constitute an independent subject for examination.

3. Instruction in physical therapy should be given by a special instructor. The professor in this field should have the necessary material equipment, the needed instructional aids and a sufficient number of patients for demonstration purposes.

4. In order to accomplish the most efficient work, it would be advisable to create university institutes of physical therapy, which can be organized in the form of clinics or polyclinics. At any rate, the institutes should be accessible to patients of other clinics, and likewise to patients of urban and rural physicians.

5. The institutes should be provided with all the scientific equipment necessary for the field of physical therapy.

The permanent international committee of physical therapy decided to create an International Association of Physical Therapy, with its headquarters in Belgium.

VITAMINS AND IRRADIATED FOODS

In the section on actinology, Drs. Dufestel and Tixier (Paris) discussed vitamins and irradiated foods. The preparation of ergosterol should follow certain principles. It should be irradiated in a state of solution. The irradiation should be uniform, and the layer of the solution should be sufficiently thin for the irradiation to act on its whole thickness. The dosage must be rigorously controlled, for any excess of irradiation may destroy a part of the vitamins. The solution must not be subjected to heating and should be protected from contact with ozone. The biologic activity will serve to measure the quality of the vitamin D. The biologic test is, however, imperfect. The physical test is superior provided the degree of absorption that serves as a basis has been determined by the biologic test and all the factors entering into the preparation remain constant. The toxicity of vitamin D is undeniable but not in therapeutic doses. There is also a toxicity independent of the antirachitic action, but that exists only in products poorly prepared.

Ergosterol is indicated in rickets, spasmophilia and osteomalacia. It effects only a remineralization of the organism and does not act on anemia, digestive disorders or muscular atony. There are not many substances that are susceptible of being transformed into vitamin D. Some of them are ergosterol, milk, cocoa and certain oils.

THE RESULTS OF PHYSICAL EDUCATION

Mr. Ledent brought out that physical education in the wider sense includes not only the use of exercise and training in respiration but also the regular use of heat and light radiations. The functional integrity of the organs requires the use of all physical educative and therapeutic measures. Physical education is accomplished by the application of suitable methods: applied gymnastics, special gymnastic exercises, games, major sports, minor sports. Physical education is the great problem of individual health. It cannot be solved other than on an anatomic and physiologic basis, which presupposes a biologic and a pedagogic preparation. Pathology will contribute from its experience to the solution of the problem. The practical realization must take into account the psychologic and the sociological problems.

THE MYOPATHIES

Mr. Bourguignon of Paris thinks that from the study of myopathies it may be concluded that it is not in the electrical reactions that the distinction in the various muscular disorders must be sought but solely in the etiology and in the evolution. He divides muscular lesions into lesions secondary to lesions of the peripheral motor neuron, or degeneration, and into primary lesions including myopathy and Thomsen's disease. The latter two conditions are two distinct forms of the same anatomophysiologic state of the muscles, and one observes all the intermediary types in addition to pure myopathy and Thomsen's disease. All the myopathies are myotonic. One may find total degeneration, which is, however, rare, and partial degeneration. The latter differs from the first not by the degree of the lesion but by its distribution in a varying number of fibers. All primary muscular disorders behave like a partial degeneration and two phases must be considered: that in which the changed muscular fibers are living and have contractions characteristic of the changes, and that in which the diseased muscular fibers being absorbed, there are only normal fibers buried in interstitial connective tissue that is a veritable scar and in which the normal fibers can have only normal contractions. The author then took up in detail chronaxia in myopathic disorders, a study based on fifty-six cases.

ELECTROSURGERY IN TREATMENT OF CANCER

Mr. G. A. Wyeth of New York spoke on research made on the origin of cancer and on the prognostic importance of the histology of the tumor. Microscopic examination aids also in determining what is the most effective treatment to be employed. This examination can be made on the spot from a frozen fragment taken away with the electric knife without the least inconvenience; the biopsy and examination require only a few minutes. It must not be forgotten that a negative biopsy does not exclude the possibility of a malignant tumor. Electrosurgery, along with evident advantages, has a superiority over other methods in that it may be effective in advanced cases that are resistant to irradiation. It is likewise advisable for beginning lesions and for precancerous lesions. The electric knife prevents metastasis by sterilizing the tissues and by closing the lymph glands through their section. Depending on the case, one uses the endothermic knife or desiccation and coagulation.

MODERN TREATMENT OF ACCESSIBLE TUMORS

Mr. McFee of Boston emphasized the great value of electrical treatments. Electrocoagulation and desiccation are the preferred treatment for superficial tumors. The action of these methods is sure and rapid. One must go beyond the limits of the tumor and operate widely. Enlarged tonsils yield likewise to electrocoagulation and to desiccation. Local anesthesia suffices. The procedure requires unfortunately considerable time—about six weeks. Most rectal lesions, hemorrhoids, fissures and fistulas

are amenable to electrosurgery; likewise hydrocele, the last mentioned without anesthesia.

ELECTRICITY IN TREATMENT OF EPIDEMIC POLIOMYELITIS

Mr. Moldaver of Brussels reported on his treatment of sixty patients. Electrical exploration is indispensable to clarify the diagnosis, determine the prognosis, and follow the evolution of the disease and the effects of the treatment. Dielectrolysis, introduced by Bourguignon, renders excellent service. If treated sufficiently long, patients with poliomyelitis may often recover completely or at least improve, even the grave cases. To combat chills and trophic disorders, diathermy may be used. Galvanization is the best excitomotor for muscles that do not show degenerative reaction.

BERLIN

(From Our Regular Correspondent)

March 16, 1931.

Increase in Lung Cancer

Professor Hegler, the director of the large St. Georg Hospital in Hamburg, reports that, since 1924, there has been in that region a notable increase in the frequency of primary cancer of the lung. From 1911 to 1923, twelve years, primary cancer of the lung constituted 0.36 per cent of all necropsies; during the seven-year period 1924 to 1930 the proportion rose to 1.06 per cent of all necropsies. The 50 to 60 and the 60 to 70 age groups were especially affected. The incidence among males is about three times as great as that among females. Among the causes of the increased incidence is the present higher average age of the population. More persons than formerly enter the cancer age. In addition to constitution, hereditary predisposition and trauma, chronic inflammatory irritants of all kinds may be incriminated, among which, besides influenza, may be mentioned especially the inspiration of dust and the exhaust gases of automobiles, more particularly of the heavy-oil motors. It is the duty of physicians, and particularly of health officers, to demand that exhaust gases of automobiles be made innocuous.

The Function of the Thyroid Gland

Prof. Leon Asher, physiologist, of Berne, has published studies on the physiology of the internal secretions. On request, he recently addressed the Berliner Medizinische Gesellschaft on the function of the thyroid, confining himself entirely to observations at his own institute. Among the complicated metabolic effects of the thyroid, the augmentation of oxygen consumption occupies first place. This action was demonstrated by Asher by means of an ingenious experiment. A normal animal, a thyroidectomized animal and an animal in which overactivity of the thyroid gland has been induced by the injection of thyroxin are placed in a compartment from which the oxygen has been partially removed by subpressure and then an equalization of pressure has been brought about through the introduction of hydrogen. The animal with the overactive thyroid, owing to its increased oxygen requirement, collapses first, while the thyroidectomized animal holds out longer than the normal animal. The same result can be secured by the injection of thyroid gland substance or by blood from the veins of a thyroid or from the brachial vein in a patient with exophthalmic goiter. On the basis of these considerations, it has been suggested at the Mayo Clinic that the mortality following operations for exophthalmic goiter may be reduced by putting the patient in an overpressure chamber, in order to meet the need of a temporary increase in the oxygen requirement. The influence of the activity of the thyroid can be shown also on other organs; for instance, the oxygen consumption of the isolated muscle is increased by thyroxin. Even a single cell completely isolated from the nervous system changes its activity under the influence of the thyroid. In the phagocytosis experiment the increased receptivity of the leukocytes under the influence of thyroxin can be demonstrated. Thus, an action independent of the nervous system is possible. The relations between thyroid function and the nervous system can be shown by the change in the permeability of cells (resorption experiments with crystalloids and colloids, action of diuretics) before and after extirpation of the inferior cervical ganglion. While it is true that autonomic organs such as the thyroid are not absolutely dependent on the nervous system for their secretory activity, the more delicate regulation of function is unquestionably controlled by the nervous system. Thyroxin and insulin are, to a certain extent, antagonistic with respect to their influence on metabolism. There is also a relation between thyroid, spleen and bone marrow. With nucleic acid a hyperleukocytosis can be produced in the bone marrow; after thyroidectomy the hyperleukocytosis is reduced, but following extirpation of the spleen as now performed it returns. From the many individual facts a synthesis must be worked out; it is the task of scientific research to figure out the correlation of the various thyroid functions to one another and their relations to other functional areas, in order to understand the harmonious action on the organism as a whole.

Use of the Sound Film in Psychiatry

About 1900, Professor Sommer, psychiatrist, of Giessen, suggested that in psychologic examinations the statements of mental patients be recorded phonetically. But not until the invention of the sound film, Dr. Zwirner, of the Kaiser-Wilhelm-Institut für Hirnforschung, in Buch, points out in the *Klinische Wochenschrift*, has it been practicable to carry out Sommer's suggestion. He describes how he made such a record without the patient having any knowledge of the fact, and from the sound film he prepared a sound plate, which is more easily handled and is better adapted for examination for phonetic purposes and makes possible a verification. Examination of the record thus far has permitted the distinct recognition not only of a vivid mimicry but also of the gesticulations employed by the speech-disturbed patient to aid in the expression of his thought. Furthermore, it appeared that the patient is led by his speech defects to a great number of new creations that resemble to a certain extent the babbling of young children before they are able to talk plainly. The patient used formations that, since he had scarcely been beyond the limits of his countryside, he could never have heard before. There is no doubt that the sound film in psychopathology, phonetics and language culture, owing to the possibility of recording not only the uttered sounds but also the entire mimicry, together with the gesticulations, will open up a new field of research.

Anniversary of the Inauguration of the Kaiserin-Friedrich-Haus

The Kaiserin-Friedrich-Haus for the promotion of postgraduate medicine in Berlin celebrated recently the twenty-fifth anniversary of its inauguration on March 1, 1906. In his address, Hamel, president of the federal bureau of health and chairman of the curators of the Kaiserin-Friedrich-Stiftung, emphasized that postgraduate medicine is today an important factor in public health administration. Almost 8,000 physicians (a fifth of the total number of German physicians) have taken part in the postgraduate courses. In order to give those who have promoted the work tangible evidence of gratitude, the board of curators has had a medal prepared that bears the words "Für Verdienste um die ärztliche Fortbildung" (in recognition of services performed for postgraduate medicine). Professor Adam, director of the "Haus," described the development of the institution. Today, in addition to the center for postgraduate medicine, three other enterprises have their headquarters here: the federal commission for popular education in hygiene, the federal commission for cancer control, and the permanent exhibit of the Hygiene-Museum in Dresden.

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BUDAPEST

(From Our Regular Correspondent)

March 5, 1931.

International Trachoma Prize

The royal Hungarian minister of public welfare and labor offers a prize of 2,000 Swiss francs (about $500) for independent work, published or unpublished, on the etiology of trachoma. Essays intended for the competition must be addressed to the eye clinic of Prof. Dr. Emile Grosz of the Royal Hungarian Peter Pázmány University, Budapest VIII, Mária utca 39, not later than June 30. The jury of award may also consider works not submitted for competition but appearing in print between July 1, 1929, and June 30, 1931. The essays submitted may be written in German, English, French, Italian or Hungarian. The jury of award consists of Mr. A. F. MacCallan of London, Dr. Victor Morax of Paris, Prof. L. Maggiore of Bari, Italy, Prof. Carl Prausnitz of Breslau, Germany, and Prof. Emile Grosz of Budapest, Hungary.

Educated Men Unemployed

Prof. Paul Szandtner stated at a recent meeting of the Community Science Society that the future for graduated men is not rosy, in view of the increase in the number of diplomas issued. This state of affairs is reflected in the results of conscription of mental workers. In 1928 there were 35,000 persons who passed matriculation examination and 5,200 individuals possessing university degrees who, despite their education, were forced to earn a living not by their intelligence but with other work. At the same time there were in the lines of unemployed mental workers 5,000 persons possessing matriculation and 2,000 having high school degrees.

A New Treatment of Diphtheria

According to Ladislaus Kostyál of the pediatric clinic of the Debretzin University, in cases of diphtheria the function of the liver is reduced, the quantity of glycogen decreases and in consequence the detoxication capacity of the liver suffers. Theoretically, a therapeutic method is indicated which promotes the deposit of glycogen and thereby increases the functional ability of the liver. This can be achieved by the administration of insulin and dextrose. Kostyál tried insulin therapy in 121 cases. In all patients, prior to the administration of serum, he determined the blood sugar content. In lighter cases the patients received only insulin, while in gangrenous, hemorrhagic cases, or in instances of severe disturbances of the heart muscle, a combined therapy was given. The quantity of insulin given was adjusted to the value of blood sugar, and in general from 10 to 20 units has been given two or three times daily.

In lighter cases recovery took place, and in severe conditions on the administration of insulin and dextrose good results could be achieved. The arrhythmias of the heart improved quickly and the liver reached its original size. Even cases that came to necropsy showed a large glycogen content of the liver. The appetite of the patients improved. While previous diphtheria mortality amounted to from 27 to 32 per cent, it fell to 8 or 10 per cent after the introduction of the insulin treatment. Kostyál emphasized that insulin and dextrose therapy was not a specific treatment; it merely increases the defensive power of the organism.

Marriages

CHARLES BARON, Beloit, Wis., to Miss Charlotte Lopes Salzedo of Montreal, Que., Canada, in Cincinnati, January 8.

THOMAS J. COLLINGS to Miss Etta B. Sutton, both of Rockville, Ind., March 8.

CHARLES V. CRASTER, Newark, N. J., to Miss Ann Bell Nelson, April 7.

Deaths

John A. Foote ✦ Washington, D. C.; Georgetown University School of Medicine, Washington, D. C., 1906; assistant professor of therapeutics and materia medica, 1906-1908, assistant professor of anatomy, 1908-1910, associate professor of therapeutics and pharmacology, 1911-1917, associate professor of clinical medicine and diseases of children, 1917-1920, since 1920 professor of pediatrics, and since 1929 dean at his alma mater; member of the American Pediatric Society; past president of the Medical Society of the District of Columbia and the Association of American Teachers for Diseases of Children; director and trustee of the American Child Health Association; trustee of the National Geographic Society; delegate to the International Medical Congress, London in 1913, the Pan-American Child Health Congress in Havana and the International Congress on Pediatrics at Stockholm; pediatrist to the Providence and Children's hospitals, consulting pediatrist to the Foundling and Gallinger hospitals; author of "Essentials of Materia Medica and Therapeutics," "Diseases of the New Born," and "Diseases of Bones and Joints in Childhood" and others; aged 56; died, April 11, of heart disease.

William Stevenson Baer ✦ Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1898; clinical professor of orthopedic surgery at his alma mater; member of the American Orthopedic Association, Southern Surgical Association and the American College of Surgeons; served during the World War; consultant orthopedic surgeon to the Sheppard and Enoch Pratt Hospital, director of the Children's Hospital School and visiting orthopedic surgeon to the Johns Hopkins Hospital; aged 58; died, April 7, in Union Memorial Hospital, of cerebral hemorrhage.

Frederick Frellinghuysen Cornell Demarest ✦ Passaic, N. J.; Bellevue Hospital Medical College, New York, 1888; member of the American Laryngological, Rhinological and Otological Society; on the staffs of the Manhattan Eye and Ear Hospital, New York, and the Passaic (N. J.) General Hospital; aged 74; died, March 28, at Rutherford, of cerebral hemorrhage.

Wesley Lyman Curtis ✦ Lincoln, Neb.; Rush Medical College, Chicago, 1896; member of the American Academy of Ophthalmology and Otolaryngology and the American College of Surgeons; formerly professor of anatomy at Omaha Medical College; aged 61; died, March 9, in the Clarkson Hospital, Omaha, of pneumonia, following a cerebral hemorrhage.

Michael John O'Meara, Worcester, Mass.; Harvard University Medical School, Boston, 1887; member of the Massachusetts Medical Society, American Psychiatric Association and the New England Society of Psychiatry; on the staffs of the City Hospital, St. Vincent Hospital and the Worcester State Hospital; aged 69; died, March 29, of myocarditis.

James Francis Grattan ✦ New York; Columbia University College of Physicians and Surgeons, New York, 1913; served during the World War; director of plastic surgery of the department of hospitals; on the staffs of the Mount Sinai, Broad Street and Kings County hospitals; aged 41; died, March 25, in the Park West Hospital, of acute leukemia.

Adolph Ernest Ibershoff, Cleveland; University of Michigan Homeopathic Medical School, Ann Arbor, 1903; member of the American College of Surgeons; veteran of the Spanish-American and World wars; on the staff of the Huron Road Hospital; aged 53; died, March 23, of pulmonary and intestinal tuberculosis.

J. C. Sullivan, Wickliffe, Ky.; St. Louis College of Physicians and Surgeons, 1891; member of the Kentucky State Medical Association; formerly on the staff of the Western State Hospital, Hopkinsville; aged 65; died, March 16, in the Riverside Hospital, Paducah, of carcinoma of the colon.

David Coleman, Staten Island, N. Y.; New York Homeopathic Medical College and Hospital, 1884; member of the Medical Society of the State of New York; on the staff of the Richmond Memorial Hospital; aged 81; died, April 1, of uremia and chronic nephritis.

Solon George Wilson ✦ New Orleans; Medical Department of the Tulane University of Louisiana, New Orleans, 1901; on the staff of the Charity Hospital; aged 53; died, March 21, of chronic myocarditis and chronic parenchymatous nephritis.

David Boughton Wason, Bridgeport, Conn.; Columbia University College of Physicians and Surgeons, New York, 1900; member of the Connecticut State Medical Society; on the staff of the Bridgeport Hospital; aged 52; died, March 23, of heart disease.

Walter Clarence Bley ✠ Beardstown, Ill.; Jefferson Medical College of Philadelphia, 1900; president of the board of education; aged 54; died, March 15, in Our Savior's Hospital, Jacksonville, of uremia, chronic interstitial nephritis and erysipelas.

Gerald Kelley Wooll, Janesville, Wis.; Rush Medical College, Chicago, 1920; member of the State Medical Society of Wisconsin; president of the Rock County Medical Society; aged 37; died, March 16, in the Mercy Hospital, of heart disease.

Robert Caples Longfellow ✠ Toledo, Ohio; Medical College of Ohio, Cincinnati, 1887; member of the Society of American Bacteriologists and the American Society of Clinical Pathologists; aged 69; died, March 22, of cirrhosis of the liver.

Joseph Arnold Mixon, Pensacola, Fla.; University of Tennessee College of Medicine, 1911; member of the Florida Medical Association; served during the World War; aged 43; was killed, March 9, when he fell down the stairs.

Franklin Eyre Williams, Haddonfield, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1878; Hahnemann Medical College of Philadelphia, 1879; aged 74; died, March 13, in Atlantic City, of cerebral hemorrhage.

Robert William Schulenberg, Bridgeport, Ohio; Ohio State University College of Medicine, Columbus, 1914; member of the board of education; aged 40; died, in February, at the University Hospital, Columbus, of mitral stenosis.

Alexander Lorne McLaren, Boston; Harvard University Medical School, Boston, 1899; member of the Massachusetts Medical Society and the New England Dermatological Society; died, February 28, of parenchymatous nephritis.

William Carey Barker, Buchanan, Va.; Medical College of Virginia, Richmond, 1884; member of the Medical Society of Virginia; aged 74; died, February 25, in the Lewis-Gale Hospital, Roanoke, of cerebral arteriosclerosis.

Douglas Haggard ✠ McCormick, S. C.; Medical Department, University of Tennessee, 1898; served during the World War; aged 54; died, March 15, in Augusta, Ga., of acute bronchopneumonia and dilatation of the heart.

Theodore Jewett Eastman ✠ Boston; Harvard University Medical School, Boston, 1905; aged 51; died, March 9, in the Massachusetts General Hospital, of volvulus of the jejunum, intestinal obstruction and peritonitis.

Richard Edward Alleyn, Winnipeg, Man., Canada; University of Manitoba Faculty of Medicine, Winnipeg, 1924; served during the World War; aged 33; was killed, February 20, in an airplane accident.

William Anderson, Blacksburg, S. C.; Medical College of the State of South Carolina, Charleston, 1880; Civil War veteran; aged 83; died, March 31, in Gastonia, N. C., following an operation for prostatitis.

Stratford Francis Corbett, New York; Bellevue Hospital Medical College, New York, 1897; member of the Medical Society of the State of New York; aged 57; died, March 15, of chronic myocarditis.

Orman E. Smith ✠ Leoti, Kan.; American Medical College, St. Louis, 1901; veteran of the Spanish-American War; aged 60; died, March 9, as the result of a head injury received in an automobile accident in 1929.

Robert Hampton Stewart, Poplarville, Miss.; University of Louisville (Ky.) School of Medicine, 1910; aged 45; died, March 16, in the Eye, Ear, Nose and Throat Hospital, New Orleans, of mastoiditis.

James Tilley Houghton, Newark, N. J.; Harvard University Medical School, Boston, 1911; served during the World War; aged 44; died, March 25, in St. Luke's Hospital, New York of septicemia.

Lily Huldah Snider Fisher, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1918; aged 42; died, February 1, in the General Hospital, Oshawa, of pneumonia, following influenza.

Clarence W. Shaw ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1901; member of the Indiana State Medical Association; aged 56; died, March 6, in the Christ Hospital, of paralytic ileus.

John Joseph Dilts, Salem, Iowa; College of Physicians and Surgeons, Keokuk, Iowa, 1888; member of the Iowa State Medical Society; aged 66; died, March 2, of cerebral hemorrhage.

Andrew Fullen Horne, Glade Spring, Va.; College of Physicians and Surgeons, Baltimore, 1884; member of the Medical Society of Virginia; aged 74; died, March 3, of cerebral hemorrhage.

James Moran ✠ New York; Bellevue Hospital Medical College, New York, 1888; formerly on the staff of the Bellevue Hospital; aged 73; died, March 2, of cerebral hemorrhage.

Wilfred G. Fralick, New York; Royal College of Physicians and Surgeons, Kingston, Ont., Canada, 1887; aged 67; died, March 20, in the New York Hospital, of carcinoma.

Elmer Northcutt, Lexington, Ky.; American Eclectic Medical College, Cincinnati, 1890; aged 67; died, February 26, of enlargement of liver and obstruction of the bile ducts.

Brainerd Pease Flinn ✠ Redwood Falls, Minn.; Rush Medical College, Chicago, 1918; part owner of the Redwood Falls Hospital; aged 39; died, March 3, of pneumonia.

Waller J. Parker, Steelville, Mo. (licensed, Missouri; 1885); member of the Missouri State Medical Association; aged 70; died, Dec. 1, 1930, of pernicious anemia.

Rameal Dudley Robinson ✠ Toledo, Ohio; Medical College of Ohio, Cincinnati, 1893; aged 61; died, March 5, in a hospital at Washington, D. C., of heart disease.

Henry C. Holton ✠ Sidell, Ill.; Jefferson Medical College of Philadelphia, 1883; aged 77; died, March 5, in the Barnes Hospital, St. Louis, as the result of a fall.

Joseph Huger, Atlantic City, N. J.; Columbia University College of Physicians and Surgeons, New York, 1880; aged 73; died, March 16, of angina pectoris.

Ambrose Franklin Cowden ✠ Santa Cruz, Calif.; Medical Department of the University of California, 1905; aged 51; died, February 18, of angina pectoris.

Thomas Emerson Bennett, Meaford, Ont., Canada; University of Toronto Faculty of Medicine, 1891; aged 66; died, January 26, of coronary thrombosis.

Chester Walter Packard ✠ Los Angeles; State University of Iowa College of Medicine, Iowa City, 1897; aged 59; died, March 18, of coronary thrombosis.

Sirach Groll, Minneapolis; Albertus-Universitat Medizinische Fakultät, Königsberg, Prussia, 1887; aged 69; died, January 9, of arteriosclerosis.

Thomas P. Nowlin, Mount Pleasant, Tenn.; Medical Department, University of Tennessee, 1880; aged 78; died, March 16, of myocarditis.

Eugene Ford Smith, Milwaukee; Wisconsin College of Physicians and Surgeons, Milwaukee, 1905; aged 53; died, March 7, of pneumonia.

Edwin Theodore Metcalf, Colony, Kan. (licensed, Kansas, 1901); Civil War veteran; aged 87; died, Nov. 27, 1930, of cerebral hemorrhage.

Thomas F. Jones, Albany, La.; Memphis (Tenn.) Hospital Medical College, 1894; aged 81; died, January 30, in Eunice, of paralysis agitans.

Milton Silver, Los Angeles; University of California Medical School, 1922; aged 36; died, in February, following a mastoid operation.

Edwin Ransome Lewis, Westerly, R. I.; Harvard University Medical School, Boston, 1887; aged 67; died, February 27, of heart disease.

C. Fremont Ellis, Eureka Springs, Ark.; New York Homeopathic Medical College, 1879; aged 74; died, March 10, of heart disease.

Andrew Egan, Brooklyn; Medical Department of the University of the City of New York, 1879; aged 74; died, March 23, of senility.

William E. Murrell, Winchester, Tenn.; University of Nashville Medical Department, 1894; aged 71; died, March 5, of pneumonia.

Albert Byron Bishop, Iowa Park, Texas; Missouri Medical College, St. Louis, 1887; aged 80; died, February 26, of pneumonia.

Charles M. Comer, Bascom, Ohio; Columbus Medical College, 1882; aged 81; died, March 5, of myocarditis and arteriosclerosis.

A. V. Banes, St. Joseph, Mo.; Jefferson Medical College of Philadelphia, 1868; aged 86; died, March 7, of chronic nephritis.

John E. Musgrave, Handley, W. Va.; Starling Medical College, Columbus, 1886; aged 72; was killed, March 6, by a train.

William David Richardson, Bowling Green, Ohio (licensed, Ohio, 1896); aged 95; died, February 17, of senility and uremia.

Gideon S. Case, Modesto, Calif.; University of Michigan Medical School, Ann Arbor, 1870; aged 83; died, February 6,

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Correspondence

ANESTHESIA FOR CONJUNCTIVA AND MUCOUS MEMBRANES

To the Editor:—In THE JOURNAL, March 14, a series of articles concerning the uses of narcotics was begun. Your introduction, as usual, is of a high order, showing the object of the essays. On page 858 the following statements are made by Cutler and Holloway: "Unfortunately, science has not yet provided a substitute that will satisfactorily produce anesthesia when placed on the conjunctiva and mucous membrane, although in the former case holocaine is quite useful. Until such a drug is forthcoming, ophthalmologists and otorhinolaryngologists must continue to use cocaine for producing anesthesia by application to surfaces."

Such a conclusion is erroneous and does not give the scientific facts. All up-to-date medical men know of the value of *p*-aminobenzoyl-γ-dinormalbutylaminopropanol sulphate (Butyn) for anesthesia. I hold no brief for Abbott Laboratories, but such a dogmatic statement should not go unchallenged. Also, there is Nupercaine. Why not give these drugs the credit due them?

LEO L. MAYER, M.D., Chicago.

ANGINA PECTORIS AND DIABETES

To the Editor:—In the recent paper on angina pectoris and diabetes mellitus by Drs. Root and Graybiel (THE JOURNAL, March 21) I regret the omission of the name of the late Dr. Max Kahn, who was the first to call attention and emphasize the relationship of these two conditions (THE JOURNAL, Feb. 26, 1921). He stated that a remarkable feature of the anginal attacks in these cases is that they do not occur when the sugar tolerance is not exceeded, and that a high blood sugar will frequently cause recurrence of the attacks.

MORRIS H. KAHN, M.D., New York.

ANOTHER TRICHO VICTIM

To the Editor:—Here is another "Tricho" case:

M. C., 35 years old, a saleswoman, consulted the "Tricho Institute" of New York City six years ago for hypertrichosis beneath the chin. She stated that she was treated weekly for about twenty-five weeks. After approximately fifteen treatments had been given, the irradiated area became red and inflamed. She was advised by the doctor at the institute to use warm applications and to continue treatment. The present eruption appeared about two years after the last treatment. She was told by the doctor at the institute that this was due to "dissolving of moles," of which she had many on the face and other parts of the body. The present eruption consisted of an area of profuse and disfiguring telangiectasia, mostly beneath the chin, measuring six by three inches. There was also a moderate amount of telangiectasia on the right cheek. One area the size of a dime was darker in color and tender. There were no ulcers or keratoses. There was no evidence of hypertrichosis.

HOWARD FOX, M.D., New York.

NICKEL DERMATITIS

To the Editor:—I should like to confirm the report of Dr. Lain (Nickel Dermatitis: A New Source, THE JOURNAL, March 7, p. 771) by mentioning two additional cases.

Last summer I saw a young woman who had evidence of an acute dermatitis at the temples and around the ears. There were patches also at the left wrist and on both lateral thighs. Her spectacle frames and wrist-watch bracelet were of white gold; the garter clasps were of nickel plate. The dermatitis, because of its significant localization, suggested the cause, and it in turn cleared promptly when the offending articles were dispensed with or replaced.

Since seeing this patient, I saw a second instance with Dr. Arthur G. Schoch. His patient, a middle-aged woman, promptly developed a dermatitis following a change to white gold frames for her spectacles.

Without wishing to burden these columns with "just another case," I believe there is added significance to the importance of localization as illustrated by the garter clasp involvement and that this points to the necessity for diagnosticians to be alert to a newly described minor hazard of dermatology comparable to the "match-box" and "hat-band" dermatitis already well known.

ROBERT L. GILMAN, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MYELOGENOUS LEUKEMIA

To the Editor:—Could you advise me about this case: What is the latest treatment and prognosis of myelogenic leukemia? Symptoms began six months ago; white cells numbered 74,000, myelocytes 16 per cent, hemoglobin 60 per cent, color index 1. The spleen is large, filling the left side of the abdomen; the liver is enlarged and the heart quality is poor. The patient has lost 12 pounds (5 Kg.); the previous weight was 130 pounds (59 Kg.). The patient is the mother of five children and is poor. I dislike advising any treatment that is expensive unless it has some proved value. Please omit name.

M.D., Ohio.

ANSWER.—There is no known cure for leukemia. Properly given, adequate, short wavelength (high voltage) roentgen or radium therapy offers more than other measures to the patient with chronic myelogenous leukemia. It causes symptomatic benefit, which is often marked and gives the patient the best guaranty of the longest possible preservation of his working capacity. As the disease progresses, efficiency decreases in spite of repeated therapy. A high caloric diet may be helpful.

The average duration of life after the first symptom of the disease is about three and a half years and seldom over five years in treated cases. In the case cited, the size of the spleen and liver and level of the hemoglobin suggest that the disease has been present for more than six months, and perhaps slight symptoms referable to the disease will be found to have occurred earlier. Irradiation should definitely improve this patient's health temporarily. The treatment should be guided not by the level of the white blood cell count but by the state of the bone marrow, as told by the numbers and character of the white and red blood cells and blood platelets in the peripheral blood, and the amount of hemoglobin. The basal metabolic rate, size of the spleen and liver and the patient's symptoms also must be considered in prescribing radiation therapy, as well as the amount of irradiation that has been recently given.

The following references may be consulted:

Ordway, Thomas; and Gorham, L. W.: Diseases of the Blood, Oxford Monographs, New York, Oxford University Press **9**, 1930.

Minot, G. R.; Buckman, T. E., and Isaacs, Raphael: Chronic Myelogenous Leukemia: Age Incidence, Duration and Benefit Derived from Irradiation, THE JOURNAL, May 10, 1924, p. 1489.

Isaacs, Raphael: Blood Changes in the Leukemias and the Lymphomata and Their Bearing on Roentgen Therapy, *Am. J. Roentgenol.* **24**: 648 (Dec.) 1930.

TUBERCULOSIS ACTIVATED BY TRAUMA

To the Editor:—I have a patient, aged 38, a man, who has had an arrested case of pulmonary tuberculosis of the right upper lobe. The case has been arrested for a couple of years and examinations of the chest were negative at one and three months before his accident; also, other symptoms were negative. He has had an automobile accident, in which the steering wheel gave him a severe blow across the chest, about the right fifth intercostal space. There was no hemoptysis, but pain and soreness of the chest began about the tenth or twelfth day after the accident and lasted for several weeks. There appeared rales, moist, in the chest, and all the symptoms of pulmonary tuberculosis showed up; also positive sputum. A roentgenogram showed an active condition in the lung. What bearing would such an injury have on the recurrence of this condition? Also, I should like to know what injury similar to this one would have on a normal chest in regard to causing tuberculosis? Kindly omit name.

M.D., West Virginia.

ANSWER.—Trauma to the chest wall can cause a reactivation of a quiescent or arrested pulmonary tuberculous lesion. In the normal chest such an injury would ordinarily not be considered the activating etiologic factor in the production of active tuberculous disease, unless a latent focus of tuberculous disease had been present previously. The personal equation dependent on the experience of the examining physician is an important

criterion determining previous existent pathologic changes. Two excellent reports concerning this condition, which have recently been published, are:

J. B. Hawes 2d: Tuberculosis as an Industrial Accident, *Am. Rev. Tuberc.* **18**: 767 (Dec.) 1928.

Shipman, S. J.: Industrial Tuberculosis, THE JOURNAL, July 27, 1929, p. 257.

PEPSODENT ANTISEPTIC

To the Editor:—What is the composition of Pepsodent Antiseptic Mouth Wash? What is its phenol coefficient? M. G., St. Paul.

ANSWER.—According to Bulletin 1 of the Pepsodent Company the composition of Pepsodent Antiseptic is as follows:

Chlorthymol	0.2000%
Benzoic acid	0.2000%
Boric acid	10.0000%
Citric acid	0.1000%
Tartaric acid	0.1000%
Flavor	0.1471%
Color	0.0080%
Glycerin	10.0000%
Alcohol	25.0000%
Water	54.2449%

The phenol coefficient of Pepsodent Antiseptic is ridiculously low: 0.15.

TREATMENT OF SYPHILIS

To the Editor:—What is the most commonly used procedure in the treatment of: (1) a patient with syphilis, giving a history of a primary lesion four months ago, who has had one course of arsphenamine and one course of bismuth, followed by a negative Wassermann reaction after a period of rest of one month; (2) a patient giving no history of infection but whose blood (in the course of a general examination) shows a 4+ Wassermann? Neither of these two cases presents any signs or symptoms of secondary or tertiary lesions. Please omit name. M.D., New York.

ANSWER.—1. The treatment of early syphilis should be continuous without interpolated rest periods of any kind. It should consist of courses of arsphenamine or neoarsphenamine, alternating with courses of bismuth, and should be continued without interruption for one full year after the patient's blood Wassermann reaction has become and has remained completely negative. For the average young adult in good physical condition, the arsphenamine courses should consist of six injections of 0.4 Gm. each at weekly intervals. If neoarsphenamine is used, the course should consist of from eight to ten injections of 0.6 to 0.75 Gm. at weekly intervals. The duration of bismuth courses may be gradually lengthened as treatment proceeds: that is, the first course of four injections, the second course of six injections, the third course of eight injections, and so on. Treatment should preferably be ended with a course of bismuth. The spinal fluid should be tested as a routine about the ninth month of treatment. When treatment is completed, there should ensue a year of probation during which the patient has no manifestations of syphilis, no positive Wassermann reactions, a negative Wassermann reaction at least as often as every two months and, at the end of the year, a completely negative physical examination and a second negative test of the spinal fluid. Should the spinal fluid be found to be positive at the time of the first routine examination, a special problem is introduced into treatment which would need further consideration, depending on the type of abnormality present. It is generally agreed that rest periods during the course of treatment for early syphilis and, particularly, during the early part of the treatment, are dangerous.

2. This question cannot be categorically answered without more information about the patient. If he is under 50 and if his general physical condition is good, he should be treated for syphilis, not so much because of the presence of a 4 + Wassermann reaction at this moment as because of the distinct possibility that serious lesions may develop in the future unless treatment is given as prophylaxis. The spinal fluid should be tested before any treatment is given. If it is normal and if there are no complicating diseases, such as pulmonary tuberculosis, nephritis or hypertension, treatment may be carried out according to the same general scheme used for early syphilis. The interpolation of rest periods into the treatment of the patient who has been infected for several years is not so dangerous as in the case of early syphilis. There is no agreement as to the length of time for which treatment should be continued in this situation. Generally speaking, it is desirable here, as in early syphilis, to continue treatment until the blood Wassermann reaction has become and has remained negative for one year, or, if this result is not achieved, for a minimum of two years. In the case both of early and of late syphilis, treatment should be followed by periodic physical examinations every year or two for an indefinite period. This is the best method of dealing with a possibility of relapse or progression of a syphilitic infection.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS: Philadelphia, June 8, 1931. Denver, July 23, 1931. Sec., Dr. William H. Wilder, 122 S. Michigan Ave., Chicago, Ill.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Philadelphia, June 6, 1931. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh, Pa.

ARKANSAS: Little Rock, May 4, 1931. Basic Science. Sec., Mr. Louis Gebauer, 1002 Donaghey Bldg., Little Rock, Ark. Homeopathic, Little Rock, May 12, 1931. Sec., Dr. Allison A. Pringle, Eureka Springs, Ark. Regular, Little Rock, May 12-13, 1931. Sec., Dr. S. J. Allbright, Searcy, Ark. Eclectic, Little Rock, May 12, 1931. Sec., Dr. Claude E. Laws, 803½ Garrison Ave., Fort Smith, Ark.

MINNESOTA: Minneapolis, Regular, April 21-23, 1931. Sec., Dr. E. J. Engberg, 524 Lowry Bldg., St. Paul, Minn.

NEBRASKA: Omaha, May 5-6, 1931. Basic Science. Acting Sec., Mr. P. H. Bartholomew, Lincoln, Neb.

NEVADA: Carson City, May 4-6, 1931. Sec., Dr. Edward E. Hamer, Carson City, Nev.

OHIO: Columbus, June 2-5, 1931. Sec., Dr. H. M. Platter, Ohio State Savings Bldg., Columbus, Ohio.

WISCONSIN: Milwaukee, June 6, 1931. Basic Science. Sec., Prof. R. N. Bauer, 3414 W. Wisconsin Ave., Milwaukee, Wis.

WYOMING: Cheyenne, June 1, 1931. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne, Wyo.

Arkansas Reciprocity Report

Dr. Sam J. Allbright, secretary of the Board of Medical Examiners of Arkansas, reports 16 physicians licensed through reciprocity with other states from May through December, 1930. The following colleges were represented:

College	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Loyola University School of Medicine	(1927)	Illinois
State University of Iowa College of Medicine	(1929)	Iowa
University of Louisville School of Medicine	(1894)	Kansas
Tulane Univ. of Louisiana School of Med.	(1928), (1929, 2)	Louisiana
St. Louis University School of Medicine	(1924)	Missouri
University Medical College of Kansas City	(1906), (1913)	Missouri
Columbia University College of Phys. and Surgs.	(1914)	Mississippi
University of Tennessee College of Medicine	(1928), (1929)	Tennessee
Vanderbilt University School of Medicine	(1928)	N. Carolina
	(1929), (1930)	Tennessee
Medical College of Virginia	(1926)	Virginia

California October Examination

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of California, reports the written examination held at Sacramento, Oct. 21-23, 1931. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Sixty candidates were examined, 51 of whom passed and 9 failed. The following colleges were represented:

College	Year Grad.	Number Passed
PASSED		
College of Medical Evangelists	(1930, 8)	8
Stanford University School of Medicine	(1930, 5)	5
University of California Medical School	(1929), (1930, 3)	4
University of Colorado Sch. of Med.	(1925), (1929), (1930, 4)	6
Georgetown University School of Medicine	(1930)	1
Northwestern Univ. Med. School	(1928), (1930, 2*), (1930, 2)	5
Rush Medical College	(1930)	1
University of Illinois College of Medicine	(1930)	1
University of Louisville School of Medicine	(1930)	1
College of Physicians and Surgeons, Boston	(1916)	1
University of Minnesota Medical School	(1929*), (1930)	2
St. Louis University School of Medicine	(1929), (1930)	2
University of Cincinnati College of Medicine	(1930)	1
University of Oregon Medical School	(1926), (1929)	2
University of Pennsylvania School of Med.	(1928), (1930, 2)	3
University of Wisconsin Medical School	(1929)	1
University of Vienna Faculty of Med.	(1923†), (1926), (1928)	3
McGill University Faculty of Medicine	(1930, 2)	2
Queen's University Faculty of Medicine	(1924)	1
Charles University Faculty of Medicine, Prague	(1921)	1

College	Year Grad.	Per Cent
FAILED		
College of Physicians and Surgeons, Little Rock	(1910)	27.9
College of Medical Evangelists	(1930)	72.3
University of Minnesota Medical School	(1930)	74.1
St. Louis University School of Medicine	(1930)	74.1
Creighton University School of Medicine	(1930)	72.3
University of Pennsylvania School of Medicine	(1929)	72.3
University of Vienna Faculty of Medicine	(1929)	72.6†
University of Glasgow Medical Faculty	(1930)	70.1†
University of Tomsk Faculty of Medicine	(1911)	53.7†

* These applicants have received their M.B. degree and will receive their M.D. degree on completion of one year's internship in a hospital.

† Verification of graduation in process.

Book Notices

DISEASES OF THE SKIN: A TEXT-BOOK FOR PRACTITIONERS AND STUDENTS. By George Clinton Andrews, A.B., M.D., Associate Professor of Dermatology, College of Physicians and Surgeons, Columbia University. Cloth. Price, $12 net. Pp. 1091, with 988 illustrations. Philadelphia: W. B. Saunders Company, 1930.

American medical literature has suffered from no deficiency of good textbooks on diseases of the skin. With the coming of the new volume by Dr. Andrews, it may be said to have a veritable plethora of such volumes. The book by Dr. Andrews is in general as good as any of the others and in some ways better than most. Certainly his chapters on therapeusis are well worked out, conservative and highly instructive. The illustrations are excellent; they are printed on good stock and are informative. Dr. Andrews has a well organized, succinct method of presentation of his material which makes it especially useful to the student and to the general practitioner. As has already been mentioned, the chapters on the roentgen ray, radium therapy, ultraviolet radiation and surgical diathermy are most complete and are accompanied by excellent bibliographies for supplementary reading. In the discussion of burns, the tannic acid treatment is well described, and in general the therapy is simple. The prescriptions for pruritus, appearing on pages 363 and 364, make one wonder whether it might not be possible for one to secure equally good results with a smaller number of ingredients. The classification of diseases of the skin is that followed by most other authorities. On the whole, this volume may be recommended for its comprehensive character, the exceedingly fine quality of the illustrations, and its modern point of view.

ANALYTISCHES DIAGNOSTIKUM: DIE CHEMISCHEN, MIKROSKOPISCHEN UND BAKTERIOLOGISCHEN UNTERSUCHUNGSMETHODEN VON HARN, AUSWURF, MAGENSAFT, BLUT, KOT USW. Ein Handbuch zum Gebrauch für Ärzte, Apotheker, Chemiker und Studierende. Von Dr. Ernst Kraft, Besitzer des bakteriologisch-chemischen Laboratoriums in Bad Kissingen. Fourth edition. Paper. Price, 22 marks. Pp. 464, with 153 illustrations. Leipzig: Johann Ambrosius Barth, 1931.

In this edition the entire contents have not been revised. Only small sections of methods dealing with examination of the urine and chemical and serologic examination of the blood have been brought down to date. The usual organization of subjects common to laboratory manuals is included in this volume. The sections on urine and blood, however, occupy a major portion of the text. The methods are described in a simple manner but many of these methods and the apparatus are obsolete and are not in common use in this country. The colored illustrations of blood smears are of the diagrammatic type to be found in some of the older American laboratory manuals. The author has expressly intended the book for the practitioner, the chemist and the student, but it can serve only as an ordinary laboratory textbook which does not meet the specific needs of physician, technician or student.

THE BEHAVIOR OF THE NEWBORN INFANT. By Karl Chapman Pratt, Ph.D., Amalie Kraushaar Nelson, Ph.D., and Kuo Hua Sun, Ph.D. Paper. Price, $3. Pp. 237, with 12 illustrations. Columbus: Ohio State University Press, 1930.

The development of child study in its larger aspects has taken place during the last hundred years. Interest in the behavior of the new-born is of comparatively recent origin. There have not been many experimental observations. The purposes of this investigation were to determine the reactions of the infants at birth to certain stimuli, to follow the development in the individual of these reactions, and to note the emergence of new reactions within a two weeks period. The reactions to light, taste, sound, temperature and smell have been studied. Observations were made on holding the arms and nose, the plantar reflex and the sucking reaction. During the observations the babies were placed in a specially constructed cabinet in which the temperature and humidity could be controlled. The babies were placed on a stabilimeter, so that all body movements were automatically recorded. Control and experimental periods of observation were conducted and compared. From their observations the authors conclude that the behavior of the new-born is not at all precise and specific but consists in generalized behavior with the activity greatest in those bodily segments which are nearest to the region stimulated. They believe that such well coordinated reactions as those implied by the terms love, rage and fear do not exist at this early age. These studies have been conducted over a long period with a great deal of patience. The results seem to disprove several theories concerning the innate equipment of the new-born infant. Further studies on the behavior of the infant conducted in this manner will be most valuable in leading to the practical application of observations on the training of infants.

TOXIKOLOGIE UND HYGIENE DES KRAFTFAHRWESENS (AUSPUFFGASE UND BENZINE). Von Prof. Dr. med. E. Keeser, Direktor des pharmakologischen Instituts der Universität Rostock, Dr. phil. V. Froboese, Regierungsrat, und Dr. phil. R. Turnau, Regierungsrat, im Reichsgesundheitsamt, und Prof. Dr. med. E. Gross, Dr. phil. G. Ritter, Dr. phil. E. Kuss, und Prof. Dr. Ing. W. Wilke, von der I. G. Farbenindustrie A.-G. Oppau und Ludwigshaften, a. Rh. Paper. Price, 10.50 marks. Pp. 106, with 24 illustrations. Berlin: Julius Springer, 1930.

The German government, in cooperation with certain producers of coal-tar products, sponsored and secured an elaborate study of the toxicology and hygiene of motor trucking operations. The items of particular concern were motor fuels, motor lubricants, exhaust gases and condensation products. This study was prompted by the increasing numbers of accidents, such as carbon monoxide asphyxiation in garages, and by the threat that street air may come to contain such a concentration of toxic gases as to constitute a practical hazard. This reprint is primarily made up of technical data based on chemical analyses of fuels, oils and gases; methods of collecting samples under divers conditions, such as in the street, in tunnels and directly from motors; and subjecting small animals to the action of various potentially toxic substances by inhalation and intravenous or intraperitoneal injections. One section is devoted to the methods of control. The authors conclude that carbon monoxide is the principal toxic body connected with trucking operations and that this gas may reach dangerous concentrations in enclosed areas, such as garages and tunnels, but that dispersion is so rapid in the open street that no practical danger existed under the conditions of automobile congestion obtaining in the cities investigated. This brochure is remarkable for the wealth of minute details supplied, arising from the various phases of the investigation. It is in contrast to the present trend of American scientific journals, which often insist on condensation to the point of eliminating so much of the accrued evidence that the publication is mostly a summary of opinions.

A SYNOPSIS OF MEDICINE. By Henry Letheby Tidy, M.A., M.D., B.Ch., Physician to St. Thomas's Hospital. Fifth edition. Cloth. Price, $6. Pp. 1032. New York: William Wood & Company, 1930.

The popularity of this book is evidenced by the fact that it is now in the fifth edition. The practitioner who finds it necessary to brush up quickly on the points concerning some disease, the student preparing for an examination, and those who must rapidly revise their knowledge of medicine in general will find this synopsis most admirable for their purposes. In this edition many new articles have been added. There are discussions of *Brucella abortus* infection, tularemia, yaws, postvaccinal encephalitis, sickle-cell anemia, agranulocytosis and other disorders only recently described. Many of the chapters have been rewritten to make them conform with recent discoveries. Some unnecessary material has been removed, so that the size of the volume has not been materially increased. The usefulness of this book is unquestioned and its value is increased because of its completeness and accuracy.

FRAUENSPORT UND FRAUENKÖRPER: SPORTÄRZTLICHE BETRACHTUNGEN EINES FRAUENARZTES. Von Dr. Stephan Westman, Dozent der Humboldt-Hochschule, Berlin. Nr. 13: Monographien zur Frauenkunde und Konstitutionsforschung. Herausgegeben von Dr. Max Hirsch. Paper. Price, 4 marks. Pp. 56. Leipzig: Curt Kabitzsch, 1930.

In this small monograph the author attempts to shew the harm done to women by sports of various kinds. He takes up swimming, rowing, skiing, running, bicycling, riding and gymnastics. The author discusses especially the competitive forms of these sports and points out their effects on menstruation, position of the pelvic organs, pregnancy, labor, the puerperium and the general appearance of the participants. This booklet should prove useful to physicians, athletic directors and executives and teachers in girls' schools.

THE HEALTHY-MINDED CHILD. Edited by Nelson Antrim Crawford and Karl A. Menninger, M.D. Cloth. Price, $1.75. Pp. 198. New York: Coward-McCann, Inc., 1930.

The development of healthy-minded children and thus a race of mentally healthy adults has become a problem of increasing importance. Much of the mental ill health that overwhelms millions of adults can be prevented by proper psychologic care of the child. This book is intended as a practical guide in the mental hygiene of childhood. Like many other such books, the material presented is too general and not sufficiently specific. Supposedly, the material is for the average parent with the average education but it is doubtful whether perusal of the book would leave the average parent with a clear understanding of how to meet the problems that present themselves. In the book there are chapters on what constitutes the healthy mind, mental health in the home and school, the formation of habits, lying, stealing and running away, play and mental health, and sex education. As is common with compilations of articles by various authors, there is some repetition. A useful bibliography of books on the mental health of the child is appended.

CLINIQUE MÉDICALE DES ENFANTS: AFFECTIONS DE L'APPAREIL RESPIRATOIRE. Première série. Par P. Nobécourt, professeur de clinique médicale des enfants à la Faculté de médecine de Paris. Second edition. Paper. Price, 50 francs. Pp. 362, with 61 illustrations. Paris: Masson & Cie, 1930.

CLINIQUE MÉDICALE DES ENFANTS: AFFECTIONS DE L'APPAREIL RESPIRATOIRE. Deuxième série. Par P. Nobécourt, professeur de clinique médicale des enfants à la Faculté de médecine de Paris. Second edition. Paper. Price, 60 francs. Pp. 479, with 227 illustrations. Paris: Masson & Cie, 1930.

Nobécourt presents a series of practical clinics in two volumes. The material is presented as a series of case reports, many of which have been previously published in French journals. They are collected into these volumes and are made the subject of interesting comments and discussions by the author. The practical subjects that are considered are of general interest. The respiratory complications of measles, whooping cough, scarlet fever and typhoid receive detailed consideration. In addition, such subjects as pleurisy, bronchopneumonia, tuberculosis and asthma are discussed at considerable length and are illustrated with appropriate clinical records and roentgenograms. Pulmonary tuberculosis in infancy and childhood is discussed at some length and emphasis is placed on the law of Parrot, that tuberculous involvement of the tracheobronchial glands is associated with tuberculous infection in a corresponding section of lung tissue. This view is not unlike the theory of primary lesion of the present day. The author urges the use of repeated Pirquet tests, if negative results are obtained at first. He also points out that negative Pirquet tests may occur in the presence of infections of the upper respiratory tract, influenza, measles and pneumonia. He devotes attention to allergy in asthma and the relation of the latter to eczema, and suggests that sensitization may be diminished by carefully graduated feeding of the offending protein substance. In the second volume the same general character of case reports and discussions is continued on a variety of subjects, such as adenopathy and tumors of the mediastinum, abscess of the lung, bronchiectasis, and various types of pleurisy. The significance of vomiting is stressed. These volumes deal with a wealth of clinical material analyzed and discussed in a practical way. The book should be a helpful guide to the student and the practitioner.

ESSENTIALS OF PEDIATRIC NURSING. By Ruth Alice Perkins, R.N., Graduate of Children's Memorial School of Nursing, Chicago. Cloth. Price, $2.75 net. Pp. 364, with 61 illustrations. Philadelphia: F. A. Davis Company, 1930.

Pediatric nursing presents many problems requiring for solution facts different from those needed in nursing the adult. For example, an understanding of the child's psychology is essential for his proper handling. In this book, no new material is presented but there is a thorough discussion of the bigger problems that confront the pediatric nurse. Those diseases in which the nursing care differs but little from that of the adult are touched on only briefly. A bibliography, questions and problems are appended at the end of each chapter. A valuable teaching supplement is included.

Miscellany

FINAL SESSION OF WHITE HOUSE CONFERENCE

At the session of the White House Conference on Child Health and Protection, February 19-21, in Washington, the three committees of the section on medical care for children made their final reports and recommendations.

At the conferences of committee A (growth and development) Dr. T. Wingate Todd, professor of anatomy, Western Reserve University School of Medicine, Cleveland, asserted that periodic health examinations of children are valuable not only for the health of the individual child but for the knowledge they yield of normal growth. He warned against too rigid acceptance of standards, however.

Measurement of mental status must be evaluated in the light of the child's personality and life situation and the test score must be considered a point of departure for further study, Dr. Douglas A. Thom, director of the division of mental hygiene, Massachusetts department of health, declared. Tests are now being developed that may make possible the measurement of mental growth in infants and small children.

Dr. Kenneth D. Blackfan, professor of pediatrics, Harvard University Medical School, chairman of committee A, reviewing the foregoing reports on existing knowledge in this field, observed that if parents are to be encouraged to bring children to physicians for examination, physicians in turn must take the responsibility of making a thoroughgoing and complete examination.

Reporting to committee B (prenatal and maternal care), Dr. John O. Polak, professor of obstetrics and gynecology, Long Island College Hospital, said that his committee had found the following important deficiencies in this service: (1) no nationwide obstetric program; (2) no attempt to furnish consecutive prenatal, intranatal, natal and postnatal care except in a few large cities; (3) inadequate obstetric practice on the part of physicians; (4) increasing numbers of criminal and self-induced abortions; (5) no provision for obstetric care for Negroes and women in sparsely settled districts, and (6) neglect of dental care during pregnancy.

Dr. Robert D. Mussey, professor of obstetrics, University of Minnesota, Minneapolis, reporting on organizations interested in maternal and neonatal care, said that the work of about thirty organizations during the past ten years had resulted in a lowering of the infant mortality rate from 100 to 73 per thousand of population; the committee recommended continued education of the public and closer correlation of programs through a joint committee of national organizations engaged in maternity work.

Dr. James R. McCord, professor of obstetrics and gynecology, Emory University, Atlanta, reported that midwives attend about 15 per cent of births in the United States as a whole but that in some Southern states the proportion runs as high as 40 or 50 per cent. Since there are only two midwife schools in this country, it is futile to require a formal course of training for them, but most states require the midwife to pass examinations or to attend a certain number of confinements under a physician's supervision. The great need is provision for practical training, the committee found.

Dr. Palmer Findley, Omaha, expressed for the subcommittee on undergraduate education in obstetrics the belief that the high death rate of mothers and infants in the United States is chargeable to inadequate educational facilities for physicians, nurses and midwives, but that women are themselves remiss in not going to physicians early in pregnancy.

The subcommittee on graduate education in obstetrics, headed by Dr. Rudolph Holmes, professor of obstetrics, Northwestern University Medical School, Chicago, reported that only seventeen out of forty-two medical schools answering a questionnaire attempt to give graduate instruction in short courses. Extension courses organized in ten states for physicians in their own communities through such agencies as medical societies, state boards of health and state universities were strongly commended by the subcommittee.

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In view of the fact that only twelve states and the District of Columbia require hospital internship for licensure, the subcommittee on obstetric requirements for graduation, licensure and specialization, of which Dr. Walter Dannreuther, professor of gynecology, New York Post-Graduate Medical School, was chairman, recommended that state licensing boards require internship in a class A hospital with a department of obstetrics and a personal attendance on at least thirty cases of labor. A study of curriculums showed that the ratio of obstetrics to surgical specialties was 4 to 18, yet 35 per cent of the services of the general practitioner are apportioned to obstetrics.

Summarizing these reports, Dr. Fred Lyman Adair, Chicago, chairman of committee B, urged that physicians lead in the movements to remedy the unsatisfactory conditions with respect to maternity and infancy, and expressed the opinion that states should definitely assume the responsibility for building up strong departments of obstetrics, gynecology and pediatrics in state institutions.

Committee C (medical care for children), of which Dr. Philip Van Ingen, New York, was chairman, heard from Dr. Adrian V. S. Lambert, New York, a report on facilities for convalescent care, based on replies to a questionnaire from 101 convalescent homes. It was found that most of these homes were in New England, the North Atlantic states and the states about the Great Lakes, while the rest of the country had no such facilities. Most of them were well managed, but thirty-seven reported that their buildings were not fireproof. Dr. Lambert's subcommittee found a serious lack of facilities for care of diabetic children and those recovering from nervous or mental breakdowns.

Dr. Bronson Crothers, assistant professor of pediatrics, Howard University Medical School, Boston, reporting for the subcommittee on psychiatry and psychology, declared that physicians had little to do with the opening of this new field and that they must become "psychiatrically intelligent." The subcommittee took the position that the psychiatrists and psychologists should bring their special knowledge to bear on the physchologic disturbances of childhood, but that the study of individual distress is the concern of the physician.

Dr. Robert Bayley Osgood, professor of orthopedic surgery, Harvard University Medical School, asserted in the report of the subcommittee on orthopedics that fully two thirds of the children in the United States exhibit faulty body mechanics and recommended that the problem be attacked from every possible angle by schools, hospitals, medical schools, schools of physical education and schools of nursing as well as by parents.

Dr. Clifford G. Grulee, Rush Medical College, Chicago, emphasized in his report for the subcommittee on hospitals and dispensaries that, while there are apparently enough hospital beds for children, the care and treatment of children and pediatric education lack organization and direction, largely because few general hospitals have pediatric staffs. He recommended improvement in medical education in pediatrics, organization of pediatric services in hospitals and extension of medical social service.

Miss Ida M. Cannon, chief of social service, Massachusetts General Hospital, Boston, reported that about 20 per cent of hospitals of more than fifty beds—about 600—have social service departments and that there is a heavy demand for more workers. This service needs to be more clearly defined and organized, the subcommittee believed.

Dr. J. H. Mason Knox of the Maryland state department of health, as head of a committee on health centers, found and studied 1,511 centers in cities of more than 10,000 population and 2,667 in rural areas, giving health examinations to an estimated 1,250,000 children. More than half of these centers have been established since 1920. It was found that 93 per cent of the urban centers and practically all the rural ones referred patients to family physicians for treatment. Physicians were usually paid on a part time basis. The committee submitted that a determination of the physical condition of children and the furnishing of advice in health matters is a community responsibility, and that these centers should therefore be coordinated with health programs under the supervision of local official health agencies.

In a study made by the subcommittee on dentistry and oral hygiene, Percy R. Howe, D.D.S., Harvard University Dental Department, Boston, found that as high as 95 per cent of children in the United States have carious teeth. It was believed that the solution of this problem lay in diet.

Dr. Philip Van Ingen, chairman of committee C, in a summary of the committee's work, called attention to a survey of preventive measures applied to children which showed that of 140,000 children in 146 cities, only 51 per cent had ever received a health examination and most of these were in the first year of life. Only 22 per cent had been vaccinated for smallpox and the same percentage had been immunized against diphtheria. Data were obtained for only 37,000 children in rural areas and were considered less valuable because of the small number, but they showed that 37 per cent had received health examinations, 13 per cent had received dental examination, 7 per cent had been vaccinated for smallpox and 18 per cent had been immunized against diphtheria.

Medicolegal

Contagious Disease of Prisoner—Sheriff's Duty

(Hunt v. Rowton (Okla.), 288 Pac. 342)

The Oklahoma statutes place the sheriff in charge of the county jail and make him responsible for the safe keeping of its inmates. If any prisoner complains of illness, it is the duty of the sheriff to summon the county physician, and if such prisoner is found to have a contagious disease the sheriff must immediately isolate him.

One Rowton was incarcerated and placed in a cell with three other prisoners. Shortly thereafter one of his cell mates developed smallpox. A physician was summoned and diagnosed the case, but the sick prisoner was left in the cell, as the physician apparently did not order his isolation. The jail itself was quarantined. Rowton contracted the disease and died. His widow thereupon sued the sheriff and his surety for damages. There was a verdict for the plaintiff, and the defendant appealed to the Supreme Court of Oklahoma.

The principal complaint of the defendant was the refusal of the trial court to give a requested instruction, reading as follows:

> After a quarantine has been instituted by the state or county health department, such quarantined place is under the law under direct supervision of the health officers and physicians in charge, and the sheriff and his deputies and jailers are required to execute all orders of such physician, and if the sheriff or his jailers faithfully execute all orders and directions of such health officers, then such sheriff is guilty of no actionable negligence.

Such an instruction, said the Supreme Court, would relieve the sheriff of the obligation placed on him by the statutes, to isolate prisoners suffering from contagious and infectious diseases, and would allow him to place a physician in charge of the jail and relieve himself of further responsibility for the care of prisoners placed in his charge. That is not the law. Even though the jail physician might have been liable for his negligence in not isolating the smallpox patient, that would not relieve the sheriff, who was at least a joint tort-feasor. An instruction in which the court told the jury that it was the duty of the sheriff to isolate a prisoner whose illness was diagnosed by a physician as contagious or infectious, and that if the failure of the sheriff so to do contributed to Rowton's taking smallpox, the verdict should be for the plaintiff, Rowton's widow, was correct. For the reasons stated, the judgment of the lower court was affirmed.

Compensation for Typhoid Contracted from Drinking Water

(Blair v. State Industrial Accident Commission (Ore.), 288 Pac. 204)

Blair was employed on the construction of a bridge over the Rogue River, the waters of which were contaminated. His employer provided safe drinking water nearby and provided buckets for carrying it to the bridge. Blair, however, during the hours of his employment, drank some of the river water. He contracted typhoid and died. The state industrial accident commission denied the application of his widow for compensation under the workman's compensation act, but on appeal the

circuit court, Marion County, reversed the decision of the commission. The commission thereupon appealed to the Supreme Court of Oregon.

To entitle an injured workman to compensation under the workmen's compensation act, said the Supreme Court, it is not sufficient that the workman has sustained an accidental personal injury; the accident must have arisen out of and in the course of his employment. That Blair contracted typhoid in the course of his employment is abundantly proved, but how can it be said that his contracting the disease arose out of his employment? He had his choice whether he would drink the potable water furnished by his employer or the polluted water of the river. His drinking of the polluted water was no part of his work. It no more arose out of his work than the eating of tainted food for his noonday luncheon would have done, if he had eaten such food. An injury may be said to arise out of employment when there is apparent to the rational mind a causal connection between the conditions under which the work is required to be performed and the subsequent injury. An injury cannot fairly be traced to employment as a contributing proximate cause, when it results from a hazard to which the workmen are exposed quite as much apart from their employment as with it. The causative danger must be peculiar to the work, not merely common to the neighborhood. There must be some connection between the injury and the employment other than the mere fact that the employment brought the injured person to the place of injury.

Obviously, Blair's contracting typhoid by drinking contaminated water was not a risk of his employment. If, while at work on the bridge, he had accidentally fallen into the river and involuntarily swallowed some of the polluted water and had thereby contracted typhoid, there would have been a causal connection between the employment and the contracting of the disease which caused his death. Under the undisputed facts of the case, however, there was no such connection. The judgment of the court below, awarding compensation, was therefore reversed.

Gifts in Contemplation of Death.—The revenue act of 1918 provided that any transfer of a material part of his property in the nature of a final disposition or distribution thereof, made by the decedent within two years prior to his death, without consideration, should, in the absence of evidence to the contrary, be deemed to have been made in contemplation of death and be subject to federal estate taxes. The words "in contemplation of death," said the United States Court of Claims, have been construed many times in both state and federal courts and have come to have a distinctive meaning. On principle the ultimate question concerns the motive which actuated the grantor; that is to say, whether or not a specific anticipation or expectation of death, immediate or near at hand, as distinguished from the general and universal expectation of death some time, was the immediately moving cause of the transfer. *Schwab* v. *Doyle*, 269 Fed. 321. There is a common agreement that the words "contemplation of death" mean not the general knowledge of all men that they must die. There must be a general apprehension, from some existing bodily or mental condition or impending peril, creating a reasonable fear that death is near at hand; and that apprehension must be the direct and animating cause, and the only cause of the transfer. If this apprehension so arising is absent, there is not that contemplation of death intended by the statute, especially when another motive actuating the gift is shown. *Rea* v. *Heiner* (D. C.), 6 Fed. (2d) 389.—*Wells v. United States, 39 Fed. (2d) 998.*

Evidence: Lay Testimony of Physical Disability.—An instruction given by a court to the jury that the plaintiff, "although uneducated and unskilled in human anatomy, medicine and surgery," is a competent witness to testify in his own behalf concerning his own state of physical disability should not have been given. Reminding the jury that the witness was "uneducated and unskilled in human anatomy, medicine and surgery" may be construed as a comment on the value of his testimony. The court sufficiently advises the jury that the witness is competent when it permits him to testify.—*Metropolitan Life Ins. Co. v. Lambert (Miss.), 128 So. 750.*

Society Proceedings

COMING MEETINGS

American Medical Association, Philadelphia, June 8-12. Dr. Olin West, 535 North Dearborn Street, Chicago, Secretary.

Alabama, Medical Association of the State of, Birmingham, April 21-24. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.

American Association for the Study of the Feeble-Minded, New York, May 25-28. Dr. Howard W. Potter, 722 West 168th Street, New York, Secretary.

American Bronchoscopic Society, St. Louis, June 6. Dr. Louis H. Clerf, 128 South 10th Street, Philadelphia, Secretary.

American Climatological and Clinical Association, Hot Springs, Va., May 7-9. Dr. A. K. Stone, Auburn Street, Framingham Center, Mass., Secretary.

American Gastro-Enterological Association, Atlantic City, May 4-5. Dr. Charles G. Lucas, 307 West Broadway, Louisville, Secretary.

American Gynecological Society, Hot Springs, Va., May 18-20. Dr. Floyd E. Keene, 133 South 36th Street, Philadelphia, Secretary.

American Heart Association, Philadelphia, June 9. Dr. Irl C. Riggin, 450 Seventh Avenue, New York, Executive Secretary.

American Laryngological, Rhinological and Otological Society, St. Louis, June 3-5. Dr. R. L. Loughran, 33 East 63d Street, New York, Sec'y.

American Neurological Association, Boston, May 27-29. Dr. Henry A. Riley, 117 East 72d Street, New York, Secretary.

American Ophthalmological Society, Asheville, N. C., June 1-3. Dr. Emory Hill, 501 East Franklin Street, Richmond, Va., Secretary.

American Physical Therapy Association, Philadelphia, June 8-9. Dr. C. C. Vinton, 585 West End Avenue, New York, Secretary.

American Proctologic Society, Philadelphia, June 7-9. Dr. Curtice Rosser, Medical Arts Building, Dallas, Texas, Secretary.

American Psychiatric Association, Toronto, Canada, June 1-5. Dr. Clarence O. Cheney, Hudson River State Hospital, Poughkeepsie, N. Y., Secretary.

American Society for Clinical Investigation, Atlantic City, May 4. Dr. Cyrus C. Sturgis, Simpson Memorial Institute, Ann Arbor, Mich., Sec'y.

American Society of Clinical Pathologists, Philadelphia, June 7-9. Dr. A. S. Giordano, 604 North Main Street, South Bend, Ind., Secretary.

American Therapeutic Society, Atlantic City, June 5-6. Dr. Grafton Tyler Brown, 1801 I Street, N. W., Washington, D. C., Secretary.

American Urological Association, Memphis, Tenn., May 18-22. Dr. Gilbert J. Thomas, 1009 Nicollet Avenue, Minneapolis, Secretary.

Arizona State Medical Association, Nogales, May 7-9. Dr. D. F. Hardridge, Goodrich Building, Phoenix, Secretary.

Arkansas Medical Society, Texarkana, April 21-24. Dr. William R. Bathurst, Boyle Building, Little Rock, Secretary.

Association for the Study of Internal Secretions, Philadelphia, June 8-9. Dr. F. M. Pottenger, Monrovia, Calif., Secretary.

Association of American Physicians, Atlantic City, May 5-6. Dr. James H. Means, Massachusetts General Hospital, Boston, Secretary.

California Medical Association, San Francisco, April 27-30. Dr. Emma W. Pope, 450 Sutter Street, San Francisco, Secretary.

Conference of State and Provincial Health Authorities of North America, Washington, D. C., April 29-30. Dr. A. J. Chesley, State Board of Health, St. Paul, Minnesota, Secretary.

Connecticut State Medical Society, Bridgeport, May 20-21. Dr. Charles W. Comfort, Jr., 27 Elm Street, New Haven, Secretary.

District of Columbia, Medical Society of, Washington, May 6. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, Secretary.

Florida Medical Association, Orlando, May 11-12. Dr. Shaler Richardson, 111 West Adams Street, Jacksonville, Secretary.

Georgia, Medical Association of, Atlanta, May 12-15. Dr. Allen H. Bunce, 139 Forrest Avenue, N. E., Atlanta, Secretary.

Hawaii Territorial Medical Association, Wailuku, Maui, May 1-2. Dr. F. J. Pinkerton, Young Building, Honolulu, Secretary.

Illinois State Medical Society, East St. Louis, May 5-7. Dr. Harold M. Camp, Lahl Building, Monmouth, Secretary.

Iowa State Medical Society, Des Moines, May 13-16. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.

Kansas Medical Society, Manhattan, May 5-7. Dr. J. F. Hassig, Huron Building, Kansas City, Secretary.

Maryland, Medical and Chirurgical Faculty of, Baltimore, April 28-30. Dr. John T. King, Jr., 1211 Cathedral Street, Baltimore, Secretary.

Massachusetts Medical Society, Boston, June 8-10. Dr. Walter L. Burrage, 182 Walnut Street, Brookline, Secretary.

Medical Library Association, New Orleans, May 19-21. Miss Sue Biethan, General Library, University of Michigan, Ann Arbor, Mich., Secretary.

Minnesota State Medical Association, Minneapolis, May 4-6. Dr. E. A. Meyerding, 11 West Summit Avenue, St. Paul, Secretary.

Mississippi State Medical Association, Jackson, May 12-14. Dr. T. M. Dye, Clarksdale, Secretary.

Missouri State Medical Association, Joplin, May 11-14. Dr. E. J. Goodwin, 634 North Grand Boulevard, St. Louis, Secretary.

National Tuberculosis Association, Syracuse, N. Y., May 11-14. Dr. Charles J. Hatfield, Henry Phipps Institute, Philadelphia, Secretary.

Nebraska State Medical Association, Omaha, May 12-14. Dr. R. B. Adams, Center McKinley Building, Lincoln, Secretary.

New Hampshire Medical Society, Manchester, May 19-20. Dr. D. E. Sullivan, 7 North State Street, Concord, Secretary.

New Jersey, Medical Society of, Asbury Park, June 3-5. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.

New Mexico Medical Society, Albuquerque, May 20-22. Dr. L. B. Cohenour, 219 West Central Avenue, Albuquerque, Secretary.

New York, Medical Society of the State of, Syracuse, June 1-3. Dr. Daniel S. Dougherty, 2 East 103d Street, New York, Secretary.

North Carolina, Medical Society of the State of, Durham, April 20-22. Dr. L. B. McBrayer, Southern Pines, Secretary.

North Dakota State Medical Association, Aberdeen, S. D., June 2-4. Dr. Albert W. Skelsey, 18 Broadway, Fargo, Secretary.

Ohio State Medical Association, Toledo, May 12-13. Mr. Don K. Martin, 131 East State Street, Columbus, Secretary.

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Oklahoma State Medical Association, Oklahoma City, May 11-13. Dr. C. A. Thompson, Memorial Station, Muskogee, Secretary.
Rhode Island Medical Society, Providence, June 4. Dr. J. W. Leech, 369 Broad Street, Providence, Secretary.
Society for the Study of Asthma and Allied Conditions, Atlantic City, May 2. Dr. W. C. Spain, 116 East 53d Street, New York, Secretary.
South Carolina Medical Association, Greenville, May 5-7. Dr. E. A. Hines, Seneca, Secretary.
South Dakota State Medical Association, Aberdeen, June 2-4. Dr. John F. D. Cook, Langford, Secretary.
Texas, State Medical Association of, Beaumont, May 5-7. Dr. Holman Taylor, Medical Arts Building, Fort Worth, Secretary.
West Virginia State Medical Association, Clarksburg, May 19-21. Mr. J. W. Savage, 303 Professional Bldg., Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

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*Action of Testis Hormone in Correcting Changes Induced in Rat Prostate and Seminal Vesicles by Vitamin B Deficiency or Partial Inanition. C. R. Moore and L. T. Samuels, Chicago.—p. 278.
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Bile Pigment and Hemoglobin Interrelation in Normal Dogs. K. Sribhishaj, W. B. Hawkins and G. H. Whipple, Rochester, N. Y.—p. 449.
Bile Pigment and Hemoglobin Interrelation in Anemic Dogs. W. B. Hawkins, K. Sribhishaj, F. S. Robscheit-Robbins and G. H. Whipple, Rochester, N. Y.—p. 463.
Further Experiments on Direct and Indirect SCN-Contracture: Dependence of Ion Antagonism on Permeability. E. Gellhorn, Eugene, Ore.—p. 477.
Acceleration and Inhibition of Hemolysis: Effect of Sugar Solutions on Resistance of Hypotonic Hemolytic Systems. J. F. Yeager, New York.—p. 484.
Ileocecal Sphincter of Dog. J. Hinrichsen and A. C. Ivy, Chicago.—p. 494.

Vitamins A and D in Some Margarines.—As tested on rats, an animal fat margarine churned in whole milk was found by Fetter and Carlson equal to butter in vitamin A content. A margarine with coconut oil as the fat content was very deficient in vitamin A. As tested by the cure of rickets in rats, the oleo-oil-lard-milk margarine studied was superior to butter in vitamin D content.

Effect of Training on Recovery from Exercise.—A study was made by Gemmill and collaborators of the effect on the metabolism, ventilation, respiratory and pulse rates and blood pressure during the recovery period following severe exercise on a treadmill in two subjects before and during a course of training to running. It was noted that the metabolism, blood pressure, pulse rates and gross and net respiratory quotient for the recovery period to the standard work did not change during the training.

Testis Hormone in Vitamin B Deficiency.—Tests of male rats kept by Moore and Samuels on a diet deficient in the antineuritic fraction of vitamin B, or on insufficient diets containing an excess of B, were found to consist of normal seminiferous tubules in active spermatogenesis but the reproductive accessories (prostate gland and seminal vesicles) were castrate in type. Daily injections of either testis hormone or anterior hypophysis hormone from pregnancy urine into animals with castrate accessories caused the castrate condition to be replaced by the normal state within a period of ten days. The observations are interpreted thus: Partial starvation induced by diets deficient in vitamin B, or insufficient diets rich in B, leads to a poor nutritive state in the organism, which affects the hypophysis. The inhibition of hypophyseal secretion leads to a lowered amount of the sex stimulating hormone available in the organism. In the absence of this stimulating substance the testes fail to continue their endocrine function and castrate accessories are present. Injections of testis hormone stimulate the accessories directly, whereas injections of hypophysis hormone stimulate the intact testes to secrete their hormone, which then acts on the accessories. There is evidence that under the conditions of the experiment the endocrine function of the testis is disturbed, whereas spermatogenic function continues.

Influence of Testis Hormone on Estrous Cycle in Rat.—The daily injection of testis hormone into spayed female rats by Ihrke and D'Amour did not stimulate the cornified vaginal smear of estrus or have any demonstrable effect. Injections of mixtures of testis hormone and estrin into spayed females are accompanied by the cornified cell smear as long as the injections are continued. When the injections are stopped the leukocyte (or diestrous) smear appears and is permanent. Testis hormone injected daily into normal females suppresses the estrous cycle for the period of the injection. When injections are no longer given, the normal cycle expressed by the vaginal smear reappears. Normal female rats with cycles suppressed by testis hormone give cornified smears within two to three days after injection of the sex stimulating anterior lobe secretion prepared from pregnancy urine.

Regional Sympathectomy and Muscle Glycogen.—From the results of their study, Dworkin and collaborators infer that while exclusion of sympathetic nerve impulses to a region may be associated with a decrease in muscle glycogen, this decrease is neither very marked nor constant. The fact that sympathectomized muscles contain an appreciable amount of glycogen even months after denervation indicates that glycogen storage in muscle is not dependent on sympathetic nerve impulses.

Effect of Insulin on Heart Rate.—The action on the heart rate of hypoglycemia-inducing doses of insulin was tested by Dworkin in normal cats and in cats surviving excision of portions of the autonomic nervous system. The following changes may occur: (1) acceleration, due to central sympathicosuprarenal impulses; (2) slowing, due to central vagus stimulation; (3) slowing, due to a peripheral action. In the intact animal these effects are expressed in a heart rate that is seldom above the basal level. The inference is that, while both divisions of the autonomic nervous system may be stimulated during insulin hypoglycemia, it is the vagus influence that predominates in organs that are innervated by both sets of nerves. In completely sympathectomized cats with the heart denervated, insulin has a delayed action on the heart rate manifested in a prolonged, though not marked, slowing. This slowing develops gradually, attaining the maximum long after the lowest blood sugar level has been reached, and some time after injection of dextrose. Injected without previous insulin administration,

dextrose has no definite effect on heart rate in these animals. The slowing can be promptly abolished by atropine sulphate.

Diuresis by Conditioned Reflex.—Marx describes experiments in which reflex diuresis was obtained in dogs as a result of psychic stimuli. He believes that this demonstration is of twofold significance: as evidence for the importance of cerebral mechanisms in the regulation of diuresis, and in providing a method for the study of psychic mechanisms whereby it is possible to obtain a quantitative measure of the effects produced.

Activation of Gastric Secretion by Vagal Stimulation.—A satisfactory method has been evolved by Vineberg for obtaining a gastric secretion in a dog under anesthesia through the application of rhythmic stimuli to the vagi in the neck. A weak induction current applied to the vagi in the neck stimulates a flow of mucus having a high digestive power. The chief source of the mucus appears to be the mucous membrane of the body of the stomach, since it was obtained following the exclusion of the mucoid secretions from the esophagus and from the pylorus. A strong induction current provokes a flow of gastric juice with a high digestive power, high acidity, normal content of chlorine and a small amount of mucus. It is suggested that the vagus nerve contains different fibers innervating different cytologic elements of the gastric mucosa and that these may be activated by induction currents of different strengths.

Physiologic Effects of High Frequency Current.—Experiments are described by Nasset and collaborators which show that high frequency current as applied to anesthetized dogs is capable of raising their average body temperature 3.6 to 8.5 degrees C. The respiratory metabolism was increased 27 to 172 per cent. The rate of respiration in some cases increased twenty-five fold. Whole blood carbon dioxide content, as well as plasma carbon dioxide content, was decidedly diminished. When the average body temperature reached 41 or 42 C., the blood sugar concentration fell rapidly while the nonprotein nitrogen concentration showed a large increase. The blood chloride concentration failed to exhibit any gross change. The location of the electrodes, whether across the head or across the trunk, did not influence the character of the results.

Arkansas Medical Society Journal, Little Rock

27: 135-160 (Dec.) 1931

Thermal Baths in Treatment of Syphilis. E. A. Purdum, Hot Springs.—p. 135.

Wood's Modification of Hodgen Splint with Myodermic Traction Appliance. H. D. Wood, Fayetteville.—p. 139.

Indications for and Against Tonsillectomies with Substitute Treatment in Selected Cases. H. J. G. Kooba, Rogers.—p. 141.

Journal of Urology, Baltimore

25: 117-246 (Feb.) 1931

*Plastic Surgery of Ureter. J. K. Ormond, Detroit.—p. 117.

*Denervation of Ureter: Operation for Cure of Ureteral Spasm. L. R. Wharton and W. Hughson, Baltimore.—p. 145.

*Roentgenologic Control of Exposed Kidneys in Operations for Nephrolithiasis, with Use of Intensifying Casette. E. Beer, New York.—p. 159.

*Technic of Roentgen-Ray Control in Operating Room. E. W. Benjamin, New York.—p. 165.

Management of Calculi in Lower Ureter. J. D. Barney and R. Chute.—p. 173.

Granuloma of Ureter. F. S. Patch, Montreal.—p. 193.

*Resection of Localized Areas of Pyonephrosis or Hydronephrosis in Congenitally Normal Kidney. P. G. Smith and G. F. McKim, Cincinnati.—p. 203.

Hemorrhagic Renal Cyst. W. C. Stirling, Washington, D. C.—p. 213.

*Multilocular Tuberculous Cyst of Kidney: Resection and Recovery. A. Ravich, Brooklyn.—p. 223.

Ectopic Ureter. S. B. Kelley, Boston.—p. 241.

Plastic Surgery of Ureter.—Ormond states that, in selected cases, plastic operations on the ureteropelvic junction are indicated. The type is to be decided on the merits of the individual case. Nephropexy of some kind is to be used in most cases. Catheter splinting of the ureter according to Peck's method is to be used in most cases. A pyelogram of the supposedly uninvolved kidney should be part of the diagnostic procedure in every case of hydronephrosis. In case of a markedly injured kidney it is probably better to remove the kidney than to perform a plastic operation unless the other kidney is injured or shows an early stage of the same condition. In elderly individuals with normal function on the opposite side, nephrectomy is to be preferred to a plastic operation. In case the financial burden entailed by a long convalescence, the follow-up treatment, and the possible time loss and expense of a second operation is excessive for the particular patient concerned, nephrectomy is to be preferred to a plastic operation in the presence of normal function on the other side, even in younger persons. In cases of aberrant vessels, the procedure to be followed is to be decided by the size of the vessel: section in the case of small vessels, transplantation of the ureter to the other side of the vessel in case of the larger ones.

Denervation of Ureter.—Wharton and Hughson report two cases of persistent and severe ureteralgia. One developed a month after the removal of the opposite kidney for tuberculosis. The other came on insidiously, apparently after a fall, with no evidence or history of past renal infection, but showing a definite hydro-ureter and hydronephrosis. Both were definitely relieved at first by ureteral dilation, but eventually this failed. When the situation became desperate, ureteral denervation was done and accomplished complete cure in both cases. One patient has been well for almost six years, the other for three and one-half years. So far as the authors know, this operation has never been performed before. The interpretation of the physical conditions found in the ureter is difficult. In no case was there any obstruction to the passage of a number 8 renal catheter. Only one of the three ureters showed any dilatation of hydronephrosis. The urine was sterile and clear. These observations do not indicate any intrinsic diminution in the caliber of the ureter and exclude organic ureteral obstruction and stricture. They seem to signify rather a persistent state of spasticity. The fact that denervation of the ureter cured the condition entirely would seem to support this. Denervation in these cases was not followed by any evidence of ureteral or renal dysfunction. In the one case examined after operation there was no subsequent hydronephrosis or hydroureter. The marked decrease in the sensitiveness of the ureter after denervation was shown in a striking manner by postoperative urologic study.

Roentgenologic Control of Exposed Kidneys.—Beer has been controlling roentgenologically stone operations on the kidney and ureter for the last five years. Fluoroscopy gave way to exposure on films, and since the adoption of an improved cassette and intensifying screen the latter is used regularly in all complicated cases, and in all cases with non-single stones. Occasionally it has been impossible to locate the stones after the kidney is exposed. They cannot be palpated from without the exposed kidney or with a finger in the pelvis. A hurry up call brings the roentgen expert to the operating room. His film shows the position of the stone and, instead of a wide exploratory nephrotomy, one or more small incisions into the cortex will deliver the localized stones. Time and again the operator has thought all stones were removed and roentgen control has shown stones or fragments in the kidney cavities or parenchyma, even after most careful search and prolonged forceful irrigation of the pelvis and calices. Unfortunately, the operator does not in all cases locate all fragments discovered by the film. When small fragments are thus left behind, the author drains by nephrostomy and avails himself of irrigations in the hope that such unrecovered fragments will discharge spontaneously or be washed out. In a fair number of such cases stone fragments have been recovered, and in a few nature has expelled them through the drainage tract after the tube has been withdrawn.

Roentgen Control in Operating Room.—Benjamin describes a special small cassette measuring 3¼ by 4¼ inches, with an aluminum cover and containing a double intensifying screen. He had been using the Bucky kidney films but had practically discarded them before the introduction of the cassette for freshly cut films wrapped in ordinary black paper. The cassette has proved a distinct advance in this field. The exposure time was reduced to one tenth of what it was with the use of the ordinary film. The cassette is not subject to buckling, thus eliminating artefacts, which were found to be troublesome previously in using the ordinary film. It is readily kept clean and easily reloaded. The roentgen exposure is made from in front of the patient. The exposure time is half a second or less, at a distance of from 12 to 19 inches. Guide needles are inserted into the

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exposed kidney by the surgeon. The loaded cassette is then dropped into a sterile rubber bag whose inside has been first carefully wiped dry and the cassette is then tucked in behind the kidney, great care being taken to cover the entire kidney and, when this cannot be done, to cover that part of the kidney under suspicion. Either side of the cassette may be used against the kidney. The surgeon then places himself directly behind the patient and helps the radiologist in directing the beam of roentgen rays. This is of great aid and insures against the possible contamination of the operative field by the radiologist moving about trying to secure the proper direction of the roentgen-ray beam. A small dark room was constructed on the operating room floor, where the film is developed as rapidly as possible.

Resection of Areas of Pyonephrosis.—According to Smith and McKim the surgical technic required in the resection of a pyonephrotic or hydronephrotic area of a congenitally normal kidney must take into consideration two hazards that are seldom met in the removal of one portion of a double or fused type of renal malformation. In the anatomically normal case the renal pelvis is always opened and hemostasis must be accomplished intracapsularly, a more difficult procedure than the extracapsular ligation that is usually possible in the fused type. In two cases reported the cut edges of the pelvis were brought together by interrupted number 1 plain catgut sutures. Hemostasis was accomplished by a continuous locked suture just inside the border of the cortex, and by using cushioned mattress sutures. In the second case the latter stitches held a thin strip of muscle tissue in contact with the cut surfaces. A careful analysis of the results of a modern urologic examination will occasionally make conservation of the renal parenchyma possible when complete destruction had been planned.

Multilocular Tuberculous Cyst of Kidney.—Although Ravich is in full accord with the present-day conception of radical nephrectomy for renal tuberculosis, he believes there are cases in which conservatism is indicated. The conservatism displayed in a case cited emphasizes the importance of careful study of each case before operation, with the idea of sparing the kidney if possible. In this instance the apparent sharply localized and circumscribed tuberculous cystlike lesion in an otherwise healthy kidney seems to justify conservative resection of the diseased portion as proved thus far by the apparently complete recovery.

Kansas Medical Society Journal, Topeka

32: 37-72 (Feb.) 1931

Radiation Treatment of Nonmalignant Lesions of Female Pelvis. L. G. Allen, Kansas City.—p. 37.
Peritonsillar Infections. L. B. Spake, Kansas City.—p. 41.
Eight Years of Insulin. R. H. Major, Kansas City.—p. 42.
Treatment of Gallbladder Diseases. T. G. Orr, Kansas City.—p. 47.
Factors Involved in Consideration of Diarrheas of Infancy. J. A. Blondt, Burdette.—p. 49.
Polycystic Kidney. H. Goodloe, Independence.—p. 53.

Minnesota Medicine, St. Paul

14: 113-202 (Feb.) 1931

Place of Local Medical Society. W. J. Burns, Detroit.—p. 113.
Economic Trend in Medicine. J. G. Crownhart, Madison, Wis.—p. 118.
Economic Trend in Medicine: What is It? O. West, Chicago.—p. 121.
Health Education. F. H. Magney, Duluth.—p. 124.
Wounds of Thorax. B. F. Davis, Duluth.—p. 127.
Head Injuries. W. M. Craig, Rochester.—p. 131.
Davis Treatment of Compression Fractures of Spine: Dislocations. E. T. Evans, Minneapolis.—p. 135.
Treatment of Tetanus and Gas Gangrene. M. H. Manson, Minneapolis. —p. 142.
Acute Traumatic Surgery of Abdomen. K. Meyer, Chicago.—p. 150.
Hepatic Abscess Following Acute Appendicitis: Recovery. E. R. Anderson and R. C. Webb, Minneapolis.—p. 155.
Vaginal Hernia: Operation in Two Cases. E. K. Green and L. K. Buzzelle, Minneapolis.—p. 163.
Physicians' Cooperation in Public Health Administration. F. E. Harrington, Minneapolis.—p. 168.
Permanent Disabilities of Extremities. M. O. Henry and E. T. Evans, Minneapolis.—p. 171.

New England Journal of Medicine, Boston

204: 297-350 (Feb. 12) 1931

Plastic Surgery of Kidney and Ureter. G. G. Smith, Boston.—p. 297.
Aims of Medical Education. S. Rushmore, Boston.—p. 314.
Early Diagnosis of Extra-Uterine Pregnancy. S. R. Meaker, Boston. —p. 318.
Fracture of Carpal Cuneiform. K. T. Phillips, Putnam, Conn.—p. 322.

New Jersey Medical Society Journal, Orange

28: 85-186 (Feb.) 1931

Recurring Postoperative Parotitis. H. S. Davidson, Atlantic City.—p. 85.
Tube Flaps in Reconstructive Surgery of Face. L. A. Peer, Newark. —p. 86.
Gastro-Intestinal Patient. J. M. Marcus, New York.—p. 90.
Fungus Infections of Skin. S. J. Fanburg, Newark.—p. 92.
Treatment of Whooping Cough by Intramuscular Injections of Ether. A. S. Finkelstein, Newark.—p. 96.
Nonpathologic or Functional Heart Murmurs in Children. I. Okin, Passaic.—p. 100.
Integration of Child. I. S. Wile, New York.—p. 103.
Medical Service of Future. G. W. Haigh, Worcester, Mass.—p. 115.
Information and Misinformation in Cardiac Diagnosis. J. Polevski, Newark.—p. 121.

Occupational Therapy and Rehabilitation, Baltimore

10: 1-70 (Feb.) 1931

Occupational Therapy, Its Development Scope and Possibilities. T. B. Kidner.—p. 1.
Methods of Acquainting Medical Profession with Value of Occupational Therapy. J. C. Doane, Philadelphia.—p. 13.
Necessity of Medical Supervision in Occupational Therapy. J. S. Coulter and H. McNary, Chicago.—p. 19.
Attentive Capacity of Mentally Ill as Indicated in Physical Education. J. E. Davis, Perry Point, Md.—p. 25.
Occupational Therapy at Bloomingdale Hospital, White Plains, New York. L. J. Haas, White Plains, N. Y.—p. 35.

Physical Therapeutics, New York

49: 57-100 (Feb.) 1931

Arthritis. S. P. Scherer, Martinsville, Ind.—p. 57.
Case of Infectious Arthritis. J. W. Torbett, Marlin, Texas.—p. 64.
*Physical Therapy in Orthopedic Conditions. M. L. H. A. Snow, New York.—p. 65.
*Electrocryptectomy of Tonsil. N. Zehr, Fort Wayne, Ind.—p. 80.

Physical Therapy in Orthopedic Conditions.—According to Snow, physical therapy occupies a definite place among orthopedic procedures. The physical modalities best fitted for the treatment of noninfectious inflammation associated with orthopedic conditions are the static wave current, the static sparks and the static brush discharge. The physical agents best adapted to overcome infectious inflammation are dry hot air, roentgen rays, ultraviolet rays and diathermy. The physical agents of value for their sedative action and employed usually in conjunction with all or any of the foregoing agencies are radiant light and heat, infra-red rays and hydrotherapy. The physical agents for overcoming muscular tension are the static wave current, the static sparks, mechanical vibration, the sinusoidal current, and the wave generator current. Other physical agents assisting in the restoration of normal action are the static induced current, massage and exercise.

Electrocryptectomy of Tonsil.—Zehr emphasizes that (1) infected crypts and pockets may be eradicated by destroying only the necessary amount of tonsillar tissue; (2) tonsil tissue without offensive crypts is harmless and may be beneficial as long as it does not mechanically interfere with respiration; (3) the surgical agent best adapted to cryptectomy is a diathermic current applied skilfully; (4) cryptectomy is conservative surgery and tonsillectomy is radical surgery; (5) the field is large for a technic that is less hazardous and offers better postoperative results for the patient than tonsillectomy as it is being done today in a large percentage of cases.

Porto Rico J. Pub. Health & Trop. Med., San Juan

6: 149-259 (Dec.) 1930

*New Operation for Elephantiasis. H. Auchincloss.—p. 149.
*Survey of Infant Mortality in Porto Rico. A. F. Isern and J. R. Pastor. —p. 181.
*Application of Serologic Tests for Syphilis. E. B. Vedder.—p. 194.
*Pancreatic Juice in Normal Individuals and in Sprue. L. G. Hernández. —p. 209.
Dermatomycosis in Porto Rico: Epidermophytosis of General Surface of Skin. A. L. Carrión.—p. 217.
Social Economics in Porto Rico. H. C. Sherman.—p. 221.
Vitamin B Complex of Yellow Yautia and of Plantain. J. H. Axtmayer. —p. 229.

New Operation for Elephantiasis.—Auchincloss describes a new operation that he used in the treatment of a patient with filarial elephantiasis of one leg. Many calcified worms had been demonstrated. To remove as many of these as possible and bring the leg to relatively normal shape and size was the

double purpose. A strip of skin along the anterior surface of the leg was removed and releasing, obliquely transverse, incisions at each end were made. An almost dangerously wide amount of skin was then undermined with considerable care, just deep to what might be considered the corium. In these cases the subcutaneous fat seems retained by trabeculae of connective tissue that are coarser than normal and the change from corium to subcutaneous tissue is by no means grossly manifest. Nearly two thirds of the circumference of the leg was thus exposed. Except for the annular ligament of the ankle, the fascia covering the bone and the muscles was then removed with the subcutaneous tissue and the strip of skin *en masse*. The leg was then elevated with the knee flexed to lessen bleeding. Approximation of the skin was done with fairly nice precision and great care was taken to apply evenly diffused pressure and the leg was kept elevated with the knee flexed. During the next week, radiant heat was applied frequently. In spite of every effort, slight accumulation of lymph near the suture line occurred but not enough to vitiate the union and nutrition of the widely undermined flaps. When the excised tissues were examined roentgenologically a surprisingly larger number of calcified shadows were demonstrated than were shown in the leg before operation. So far the result has been good.

Survey of Infant Mortality in Porto Rico.—Isern and Pastor state that infant mortality in Porto Rico is high, families are large, the marriage age is early and the density of population is great. Infant mortality is greater in the towns along the coast, and higher on the western coast than elsewhere in the island. It is more noticeable among boys than among girls, and is especially noticeable among children from 1 to 6 months of age. The principal direct causes are diseases of the gastrointestinal system. Diarrhea and enteritis cause 31 per cent of the deaths of children under 1 year of age in Porto Rico. The second cause of death in children less than a year old in Porto Rico is constituted by the group known as "diseases of early infancy." Among these, congenital debility holds first place. A certain relation may be observed between this disease and malaria, uncinariasis, syphilis and tuberculosis as they occur in adults. Diseases of the respiratory system constitute the third group of direct causes of death among infants. The most important etiologic factor of respiratory diseases seems to be direct contagion of undernourished infants. The inanition is a predisposing factor in the causes of bronchopneumonia. Acute infectious diseases are also important etiologic factors. The fourth group of diseases causing infant mortality in Porto Rico is constituted by endemic, epidemic and infectious diseases. Among these, malaria and tetanus are most important. Malaria prevails along the coast. Tetanus is irregularly distributed. Next come, among acute infectious diseases, measles and whooping cough.

Serologic Tests for Syphilis.—Vedder found a close agreement of the results of the Wassermann and the Kahn tests as performed at the Army Medical School. In some cases the Wassermann test gives a higher number of units than the Kahn test, and vice versa, but the discrepancies have so far involved differences only in the reading of one tube or dilution. Since in this work each succeeding tube contains only half as much serum as the preceding, it seems probable that, by using many more tubes and diminishing the amount of serum used in the two tests by tenths instead of halves, a still closer approximation of the results would be attained. This involves altogether too much labor and too much serum to be practicable for routine work. It is desirable to avoid reporting the two quantitative tests separately. Since there is such close agreement and since both tests are highly specific, especially in dilutions at which by no possibility can there be false positives, the plan is advocated of averaging the results of the two tests and reporting the results in syphilitic units. According to this system, if the Wassermann test shows 4 units and the Kahn test 10 units, this would be reported as 7 syphilitic units; 80 Wassermann units and 40 Kahn units as 60 syphilitic units. This suggestion has the merit of combining the results of the Wassermann and the Kahn tests, expressing this combined result in a strictly quantitative manner as syphilitic units, which will be more specific and delicate than the units of either test used separately.

Pancreatic Juice in Normal Individuals and in Sprue.—A review of the pancreatic digestion is made by Hernández. The mechanics of enzyme action is taken into consideration. Comparison is made of the digestion in vivo and in vitro. The methods used are described. Comparison is made of the Gross and the Wohlegemuth method with modification made by Sokhey and Malandkar, in which they do not take into consideration the enzyme activity and periods of digestion.

Radiology, St. Paul

16: 111-290 (Feb.) 1931

*Roentgenologic Diagnosis of Bone Tumors. C. F. Geschickter, Baltimore.—p. 111.
*Lesions of Clavicle. H. S. Anderson, Baltimore.—p. 181.
*Nonsuppurative Osteomyelitis. L. C. Cohn, Baltimore.—p. 187.
Bone Metastases: Three Hundred and Thirty-Four Cases. M. M. Copeland, Baltimore.—p. 198.
*Roentgen-Ray and Clinical Study of Bones of Hands and Feet. M. Kahn, Baltimore.—p. 211.
*Central Tumors of Lower Jaw. R. F. C. Kegel, Baltimore.—p. 216.
*Lesions of Upper Humerus. R. C. Major, Baltimore.—p. 224.
Tumors of Os Calcis. J. R. Moore, Philadelphia.—p. 232.
*Bone Lesions of Lower Radius. R. L. Oliver, Baltimore.—p. 245.
Tumors of Small Intestine. T. S. Raiford, Baltimore.—p. 253.
Subacute Osteomyelitis of Femur Resembling Sarcoma: Five Cases. G. A. Stewart, Baltimore.—p. 271.
Lesions of Upper Femur. G. T. Thompson, Baltimore.—p. 278.
*Pathologic Fracture. E. D. Weinberg, Baltimore.—p. 282.

Bone Tumors.—Geschickter believes that, as a diagnostic agent in tumors of the bone, the roentgenogram is of sufficient importance to justify the organization of present-day knowledge concerning tumors of bone, from the standpoint of the features disclosed by the roentgen film. He has organized the information derived from a study of more than a thousand cases of various forms of bone tumors based on the capacity of the roentgenogram to depict changes in seven groups of observations listed thus: (1) whether the individual affected is young or old; (2) whether the lesion is single or multiple; (3) whether the lesion is medullary or periosteal in origin; (4) whether the effect of the lesion is bone destructive or bone formative; (5) whether the site is in the shaft, metaphysis or epiphysis, and which bone is affected; (6) whether or not pathologic fracture has occurred, and (7) whether the configuration of the diseased area from which such data as the mode of origin and duration of the tumor may be deduced. The various tumors of bone have been grouped on the basis of whether or not they produce single or multiple involvement in the skeleton, whether they are more prevalent in patients less than or more than 20, and whether the bone lesion is primarily osteolytic or osteoplastic in its effect. In the clinical descriptions, something of the histogenesis of each tumor has been included.

Lesions of Clavicle.—From a study of forty-one cases of lesion of the clavicle, Anderson states that a patient presenting himself with pain in the clavicular region should be questioned carefully as to trauma and venereal diseases. The physical examination should be thorough as regards the bone involvement and other skeletal lesions. Roentgen studies of both clavicles should be carried out, and, if any suspicious areas are found, roentgenograms of the chest, skull, pelvis and long bones should be made and examined for multiple lesions. The roentgen examination and the history, although probably difficult to interpret, are of great importance. Biopsy should not be carried out unless there is provision for definite and final diagnosis from the microscopic sections. If there is doubt, provocative treatment with arsphenamine may be tried with hopeful results in many so-called single lesions. For multiple lesions the primary source should be searched for and thorough roentgen or radium treatment started. As for the majority of the single lesions, the age incidence of bone cysts and giant cell tumors, which is under that of most malignant lesions in this locality, should be taken into account.

Nonsuppurative Osteomyelitis.—Cohn first considers the group which in the roentgen examination resembles sarcoma. About 33 per cent fall into this group. It seems wiser here to try the effect of radiation first to demonstrate the presence or absence of a radiosensitive tumor, and at the same time to give an opportunity for about two weeks' observation. In a number of instances, during the course of radiation therapy, there has been pus formation or discharge of sequestrum, thereby establishing the diagnosis of a benign lesion. In nine of the cases in which the roentgen changes were suggestive of sarcoma,

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about 33 per cent, biopsy, partial excision or resection was done to establish the diagnosis, in a number of instances among the earlier cases without preliminary irradiation. When the roentgenograms suggest sarcoma, when the tumor is radioresistant, and when the foci of infection are eliminated, one is justified in exploratory operation, provided the tumor, if malignant, is operable. In some instances, even though the Wassermann reaction may be negative, it seems wise to give a provocative injection of arsphenamine with another Wassermann reaction. There has been only one amputation in the author's series and that was in a case of Paget's disease, the lesion of the tibia showing a great deal of bone destruction. In one case in which the roentgen changes suggested sclerosing sarcoma there was a biopsy in another clinic. The sections were diagnosed sarcoma. The patient refused amputation and was well eight years later when last heard from in 1922. In another instance a youth, aged 18 years, had pain for two weeks following a trauma two weeks previously. There was a lesion in the upper third of the femur, in the roentgen examination looking like sarcoma. The patient was given roentgen treatment. The sequestrum came away. He has been well for six years. Five years ago the author saw a youth, aged 19, with a single lesion of the lower third of the femur. There was no history of trauma and the Wassermann reaction was negative. The roentgen examination showed sclerosis combined with ossification. At exploration the diagnosis of nonsuppurative osteomyelitis was made from the frozen section and, other than biopsy, nothing further was done. The patient has now been well for five years. The majority of these patients have been heard from, and there has been no death from sarcoma.

Bones of Hands and Feet.—Kahn emphasizes the rarity of malignant lesions in the small bones of the hands and feet. If the lesion is single in character and central and osteolytic in type, malignancy can practically be ruled out on the basis of the roentgen examination. Periosteal osteogenic sarcoma occurring as a single lesion in the small bones of the extremities is rare. It is found in about 2 per cent of the cases and is difficult to differentiate in the roentgenogram from the more frequent lesion of ossifying peristitis. The usual tumor encountered in the bones of the hands or feet contains cartilage and is either an exostosis or a chondromyxoma, both of which can be safely treated as benign. Most of the remaining tumors are of the giant cell group, or the pathologically closely related lesions of osteitis fibrosa or xanthoma, which also are typically benign. When metastatic nodules occur in the small bones, their nature may be readily discerned by the presence of diffuse involvement of the remainder of the skeleton, which is always associated with their presence in the small bones.

Central Tumors of Lower Jaw.—Kegel states that tumors of the lower jaw are shown by the roentgen ray to be either central or periosteal. Of the central tumors, the dental root abscess, granuloma and small root cyst, as well as the small dentigerous cyst because of its contained tooth, can be identified with certainty. Atypical lesions should be studied microscopically to exclude early malignancy. Monocystic lesions larger than 3 cm. cannot be diagnosed differentially by the roentgen ray. Only the condition found at operation, verified by the frozen section, can establish the nature of the pathologic changes. A polycystic appearance is produced by any of the central tumors, but most often by the adamantinoma and giant cell tumor. The dental root cyst and dentigerous cyst are treated by excision, with stripping of the epithelial lining from the cyst wall. Giant cell tumor and the monocystic adamantinoma are attacked with the chemical cautery. Polycystic adamantinomas should be resected. The bone cavity left by a central fibroma must be treated with the chemical and the thermal cautery.

Lesions of Upper Humerus.—As regards treatment of lesions of the upper humerus, the following important points are given by Major: 1. The two most frequent osteolytic lesions do not require surgical intervention. They are the benign bone cyst and the malignant metastatic tumor, whose origin is elsewhere than in defect of bone. The bone cyst is best left alone, or, if pathologic fracture has occurred, given light roentgen therapy. The metastatic tumor is treated best in this late stage by intensive high voltage roentgen therapy. 2. In all other cases, in which the nature of the tumor is doubtful, the wise procedure seems to be to put the arm at rest, administer roentgen therapy, and obtain competent consultation on the roentgenograms, rather than immediate exploration for microscopic examination. 3. Resection in all malignant lesions of the upper humerus offers as much for cure as does amputation and more for the patient, if cured.

Bone Lesions of Lower Radius.—Fifty lesions of the lower radius have been studied by Oliver. Nine different types of lesions were found. The giant cell tumor predominated, occurring in 70 per cent of the lesions. Cases and differential diagnosis are discussed under each group and the results given. Excellent results were obtained in all the benign lesions. Results in the giant cell tumor group were low on account of the advanced state of the disease. Seventy-four per cent of the patients were cured after the first treatment. All patients with nonsuppurating osteomyelitis, exostosis, chondroma, and bone cysts are well following observation and treatment. All cases of sarcoma resulted in death.

Pathologic Fracture.—In a study of 1,700 bone tumors of all types, benign and malignant, Weinberg found 160 pathologic fractures. The largest incidence, 62 per cent, occurred in multiple myeloma; 45 per cent were found in bone cysts, and in the group of metastatic carcinomas there were 33 per cent. From the standpoint of diagnosis, pathologic fracture is helpful as a symptom of onset in a central tumor of the shaft. In a patient from 5 to 15 years of age, the lesion is, most likely, a bone cyst. Occurring in a rib of an adult, it favors multiple myeloma. If the lesion is a cartilaginous one in a long pipe bone, and there is a fracture with some destruction, it favors the diagnosis of a chondrosarcoma as against a benign chondroma. From the standpoint of treatment a pathologic fracture is a good sign in a bone cyst, and it is to be treated as a simple fracture. Fractures in tumors of the bones of the hands and feet should be immobilized. If ossification does not take place, the tumor should be cauterized with the thermal cautery or curet and cauterized with zinc chloride. When they occur in multiple myeloma and giant cell tumors, one is justified in splinting and using high voltage roentgen therapy, hoping to obtain healing in multiple myeloma, and a cure in giant cell tumor, unless it is too far advanced. In sarcoma and metastatic carcinoma, a pathologic fracture in a long bone generally indicates radical treatment, either a resection or an amputation, because the limb will otherwise be useless and painful. Finally, by precautionary measures, such as crutches or splints, one can often prevent a pathologic fracture in a destructive lesion.

Rhode Island Medical Journal, Providence

14: 17-34 (Feb.) 1931

President's Address. C. S. Westcott, Providence.—p. 17.
Common Duct Stones. C. O. Cooke, Providence.—p. 18.
Intravenous Urography. E. W. Benjamin, Providence.—p. 23.
Agranulocytosis. T. C. Merrill, Paris.—p. 27.
Favus: Five Cases. W. B. Cohen and E. J. West, Providence.—p. 28.
Stammering: Psychoneurosis. S. Starr, Providence.—p. 29.

South Carolina Medical Assn. Journal, Greenville

27: 319-348 (Jan.) 1931

Vitamin B Feeding of Infants. J. I. Waring, Charleston.—p. 322.
Effects of Pregnancy on Tetania-Parathyroidpraevia. F. E. Zemp, Columbia.—p. 325.
Birth Control Among the Poor. T. H. Dreher, St. Mathews.—p. 329.

Southwestern Medicine, Phoenix, Ariz.

15: 1-46 (Jan.) 1931

*Management of Lobar Pneumonia. R. E. Thomas, Los Angeles.—p. 1.
Diagnostic Criteria of Heart Disease. G. Herrmann, New Orleans.—p. 4.
*Sodium Amytal for Preanesthetic Preparation of Surgical Cases. C. T. Sturgeon, S. F. Fagan and I. Heissig, Los Angeles.—p. 9.
Present Day Surgical Treatment of Certain Diseases of Chest. F. S. Dolley, Los Angeles.—p. 13.
Tracheobronchial Lymph Node Tuberculosis. J. M. Rawlings, El Paso, Texas.—p. 19.
Heart Symptoms Due to Emotions. G. Werley, El Paso, Texas.—p. 23.

Management of Lobar Pneumonia.—After observing 602 consecutive cases of pneumonia in a pneumonia ward, Thomas believes that lobar pneumonia is a self-limited disease the duration of which cannot be modified by any means known at present, with the possible exception of a small percentage of cases which

may be benefited by the early and frequent use of specific serum. In his experience, digitalis has been worse than useless. Codeine, caffeine, ephedrine and solution of pituitary are the only drugs which he has found to be of apparent value. Oxygen relieves cyanosis and restlessness; it should be used early and freely. The routine use of enemas and cathartics is to be condemned. Attention to ventilation, diet and rest are measures that may turn the tide in favor of the patient; the most important of these is rest.

Preparation of Surgical Cases.—Sturgeon and his associates thus enumerate the advantages of sodium amytal in the preanesthetic preparation of patients for operation: 1. The patient is relieved of all preoperative fear. 2. He is unaware that the anesthetic is being given. 3. Respirations are quiet, making upper abdominal surgery easier. 4. In most cases, less of the anesthetic agent is required. 5. After the operation the patient sleeps, with loss of memory for painful events. 6. Postoperative nausea and vomiting are absent in most cases. 7. It is valuable when complications such as hiccups, psychosis, severe pain, idiosyncrasy to opiates, and morphine addiction, are present. 8. A moderate degree of hypertension or hypotension is not a contraindication to the use of sodium amytal. The disadvantages and complications are: 1. In elderly patients with arteriosclerosis and fixed hypertension, sodium amytal should not be used. 2. In patients with badly damaged hearts and hypertension, sodium amytal should not be used. 3. In patients with lung infections, lung abscess or bronchiestasis, only small doses of sodium amytal should be used in order not to interfere with the cough reflex. 4. Persons who are known to be sensitive to any of the barbiturates should not be given sodium amytal. 5. Bronchopneumonia and edema of the lungs are commonly reported. The authors have observed only one case of bronchopneumonia and no cases of pulmonary edema. Both complications are probably due to too large a dose of sodium amytal, with too long postoperative sleep. The conclusion is drawn that any drug as powerful as sodium amytal, which can put a patient to sleep within five minutes and cannot be immediately removed from the circulation, demands great care in its administration. It is only by the best cooperation between the surgeon and the anesthetist that this can be accomplished.

Virginia Medical Monthly, Richmond

57: 705-774 (Feb.) 1931

Louis Pasteur. R. H. Garthright, Vinton.—p. 705.
Carcinoma of Rectum and Sigmoid. S. H. Graves, Norfolk.—p. 707.
Roentgen Ray in Communities Removed from Medical Centers. J. W. Robertson, Onancock.—p. 710.
Medical Supervision of Airplane Pilots. N. Mercer, Richmond.—p. 712.
Heart Disease as Surgical Risk. J. H. Smith, Richmond.—p. 715.
Cardiac Irregularities. J. M. Hutcheson, Richmond.—p. 717.
Four Cases of Tumor of Kidney in Children Under Five Years of Age. J. L. Rawls, Norfolk.—p. 720.
Value of Roentgen Ray in Diagnosis of Lesions of Colon. C. Moore, Washington, D. C.—p. 724.
Biologic Relationship of Eugenics of Development of Human Race. J. H. Bell, Colony.—p. 727.
Treatment of Carcinoma of Cervix by Radium and Roentgen Ray. E. M. McPeak, Washington, D. C.—p. 733.
Diabetic Coma. C. Smink, Baltimore.—p. 736.
Treatment of Acute Gonococcal Urethritis in Male. S. Smith, Raleigh, N. C.—p. 738.
Zinc Stearate Insufflation: Case. E. G. Scott, Lynchburg.—p. 742.
Treatment of Pellagra. C. C. Joyner, Farmville, N. C.—p. 744.
Management of Open Safety Pins in Air and Food Passages. E. G. Gill, Roanoke.—p. 746.
Rheumatism. D. B. Stuart, Dublin, Va.—p. 747.
Id. R. F. Thornhill, Pulaski.—p. 749.
Phrenicotomy in Treatment of Suppurative Pulmonary Disease. C. P. Cake, Detroit.—p. 750.
Lipiodol Injection of Uterus and Tubes: Diagnostic and Therapeutic Values. G. F. Douglas, Birmingham, Ala.—p. 753.

Wisconsin Medical Journal, Madison

30: 60-149 (Feb.) 1931

Complications and Sequelae of Pulmonary Infections. W. J. Egan, Milwaukee.—p. 75.
Convalescent Serum Therapy. J. E. Gonce, Jr., Madison.—p. 80.
Irritable Bowel. J. E. McLoone, La Crosse.—p. 84.
Ultraviolet and Heliotherapy in Tuberculosis. R. D. Thompson, Statesan.—p. 87.
Roentgenologic Manifestations of Common Inflammatory Diseases of Lungs. B. R. Kirklin, Rochester, Minn.—p. 89.
Congenital Solitary Kidney; Ptosis Causing Acute Hydronephrosis. G. H. Ewell, Madison.—p. 92.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 253-294 (Feb. 14) 1931

*Mortality in Acute Appendicular Disease. D. P. D. Wilkie.—p. 253.
*Familial Influence in Gastric Function. F. L. Apperly and J. H. Norris.—p. 255.
*Incision for Appendicectomy. A. H. Southam.—p. 258.
Method of Blood Transfusion with Reference to Children. D. Browne.—p. 259.
*Meckel's Diverticulum as Cause of Acute Symptoms. A. H. Baker.—p. 262.
*Gonococcal Rhinitis in an Infant. H. Kirkland and R. V. Storer.—p. 263.
Rupture of Pancreas. J. D. Gray and J. C. Hodgson.—p. 264.

Mortality in Acute Appendicular Disease.—Wilkie states that the mortality from "appendicitis" remains as high as it was twenty years ago, because, while facilities for treatment have improved, diagnosis in the fatal type of case has not. There is now strong evidence that the fatal cases of acute appendicular disease are primarily cases of obstruction and not inflammation of the appendix. It is necessary to distinguish between these two types of acute disease, the clinical symptoms and essential pathology of which differ widely. In the obstructive cases the condition must be regarded and treated as belonging to the same category of urgency as internal strangulation of the intestine. Free exposure at operation is essential in the obstructive cases. While immediate operation is expedient in the early stages of appendicitis, delay is advisable in the resolving case, the danger of operation being greater than that of expectancy. When a large localized abscess is present, simple drainage with minimal disturbance is the safest line of treatment. In cases with perforation and peritonitis, infection of the abdominal wound may be an important factor in determining a fatal issue. Open treatment of the wound is therefore advisable. Postoperative obstruction accounts for a number of deaths. A timely enterostomy or ileocolostomy may prove a life saving measure.

Familial Influence in Gastric Function.—In the course of some recent investigations into the question of heredity in gastric cancer, Apperly and Norris had occasion to examine, by means of the fractional test meal, the chemical and motor functions of the stomach in several members of each of thirty-one families. During this investigation they were struck by the frequency with which members of the same family gave closely similar results. That gastric acidity, the form of the acidity curve, and the emptying time of the stomach should be similar in the various members of a family would not be surprising in view of previous observations. Apperly and Semmens have shown that these characters depend largely on the tonus and activity of the gastric musculature and on certain chemical constituents of the blood. Further, the relationship of these characteristics to the ratio of pulmonary surface to body weight, and therefore ultimately to the build of the body and its constitution generally, lends further support to the hypothesis that they express family characteristics. The marked resemblance in the test-meal charts in a large number of cases is, however, from another point of view rather unexpected. When one remembers that in all instances the subjects were experiencing a test-meal experiment for the first time, with all grades of psychic disturbances consequential to the examination, the results seem to show that such influences count for much less than one has been taught to believe, unless one assumes that all members of each family reacted psychically in the same manner. In actual fact this was not so, marked differences in psychic reaction being noted among the several members of the same family. It has indeed long been the authors' view that temporary psychic disturbances have little appreciable effect on either the general form and magnitude of the acidity curve or on the emptying time of the stomach.

Incision for Appendicectomy.—Southam believes that the choice of incision in a case of acute appendicitis merits the serious consideration of every surgeon. The view taken by him is that in the McBurney muscle splitting incision the ilioinguinal nerve is liable to injury, and is sometimes followed by the appearance of a postoperative right inguinal hernia. The

paramedian incision with outward displacement of the rectus muscle has the advantage that it can be safely extended to any length; this is undoubtedly the best incision for general exploration of the abdominal cavity in cases in which the diagnosis is in doubt and good access is required. In many cases, however, this incision will be found to be at some distance from the site of infection and will necessitate careful packing off of the small intestine to avoid the risk of soiling the general peritoneal cavity when an abscess is present. For these reasons there is much to be said in favor of a lateral incision. In typical cases of acute appendicitis localized to the right iliac fossa and in young patients, Battle's pararectal incision with inward displacement of the rectus muscle is regarded as being highly satisfactory. This incision gives adequate exposure in such cases with the minimum disturbance of the inflamed parts; and as the nerves can be seen and readily avoided it rarely leads to any subsequent weakness of the abdominal wall. No case of inguinal hernia following the use of Battle's incision during a number of years has so far been encountered.

Meckel's Diverticulum as Cause of Acute Symptoms.—During a series of 105 laparotomies, performed for various conditions, four patients were operated on by Baker who showed various forms of Meckel's diverticulum. In two of these, acute symptoms were caused and, in view of the comparative rarity of such cases, they are reported in detail.

Gonococcal Rhinitis in an Infant.—Kirkland and Storer report a case of gonococcal rhinitis in an infant that presents many interesting features of clinical and sociological importance. Gonococcal rhinitis may easily be overlooked as the true cause of a coryza. The bacteriologic diagnosis is made difficult by the similarity of *Micrococcus catarrhalis*, which is also gram negative and sometimes occurs in pairs but is never intracellular. The prophylactic instillation of drops into the baby's eyes at birth undoubtedly averted an attack of ophthalmia. Inquiry into the history of the labor revealed a prolonged third stage, predisposing probably to the inoculation of the infant's nasal mucous membrane with infective vaginal secretion.

Indian Journal of Medical Research, Calcutta

18: 727-1058 (Jan.) 1931

Rat-Flea Survey of Madras Presidency. H. H. King, P. V. George, D. S. Mankikar and J. F. Jesudasan.—p. 727.
Cercariae Nicobaricae. R. B. S. Sewell.—p. 785.
Basal Metabolism of Indians (Bengalis). H. N. Mukherjee and P. C. Gupta.—p. 807.
Blood Changes in Filariasis. K. K. Das.—p. 813.
Indian Species of the Genus Phlebotomus: Phlebotomus Eleanorae N. Sp. J. A. Sinton.—p. 817.
Id.: Phlebotomus Bailyi N. Sp. J. A. Sinton.—p. 821.
Studies in Malaria: Treatment: Effects of Dosage of Drugs and Duration of Treatment on Production of Cure. J. A. Sinton.—p. 831.
Id.: Does Strain of Parasite Influence Cure? J. A. Sinton.—p. 845.
Id.: Relationship of Season to Cure Rate. J. A. Sinton.—p. 855.
Numerical Prevalence of Parasites in Relation to Fever in Chronic Benign Tertian Malaria. J. A. Sinton, Harbhagwan and J. Singh. —p. 871.
Hemolysis by Amines and Allied Substances. K. C. Sen and A. C. Roy. —p. 881.
Further Researches on Stone. R. McCarrison.—p. 903.
Chemical Composition of Urinary Calculi in Cattle. S. Ranganathan. —p. 935.
Bartonella Muris Anemia. R. McCarrison and M. Singh.—p. 945.
Osteomalacia (Late Rickets) Studies: Osteomalacia in Kangra District. D. C. Wilson.—p. 951.
Id.: Factors in Treatment. D. C. Wilson and W. K. Coombes.—p. 959.
Id.: Rickets Among Indian Children of School Age. D. C. Wilson. —p. 963.
Id.: Adult Spasmophilia. D. C. Wilson.—p. 969.
Id.: Distribution. D. C. Wilson.—p. 975.
New Species of Human Microfilaria (Microfilaria Actoni Sp. Nov.) from Eastern India Allied to Microfilaria of Acanthocheilonema Perstans. S. S. Rao.—p. 979.
Incidence of Brucella Agglutinins in Average Unselected Indian Population. S. M. K. Mallick and M. L. Ahuja.—p. 983.
Behavior of Cinchona Alkaloids Toward Living Cells: Penetration of Various Cinchona Alkaloids into Colloidal Gels. N. D. Kehar.—p. 987.
Id.: Effect of Plasmoquine on Penetration of Cinchona Alkaloids. N. D. Kehar.—p. 1001.
Cocaine Habit in India. R. N. Chopra and G. S. Chopra.—p. 1013.
Feeding Habits of Phlebotomus Minutus. H. E. Shortt.—p. 1047.
New Species of Culicoides (Culicoides Clavipalpis Sp. Nov.): Morphology of Mouth Parts and Male Terminalia of an Indian Culicoides. S. Mukerji.—p. 1051.

Journal of Tropical Medicine & Hygiene, London

34: 33-48 (Feb. 2) 1931

Science of Medicine and Cancer Research. J. A. Shaw-Mackenzie.—p. 33.
Artificial Pneumothorax from Hygienic and Social Point of View. J. Aravantinos.—p. 38.

34: 49-64 (Feb. 16) 1931

Investigation on Cholera in Asansol Mining Settlement, Bengal, India. J. W. Tomb and G. C. Maitra.—p. 49.
Pathologic Conditions Associated with Schistosomiasis in South Africa. F. G. Cawston.—p. 55.

Lancet, London

1: 335-392 (Feb. 14,) 1931

*Successful Grafting of Cornea in Rabbits. J. W. T. Thomas.—p. 335.
*Comparative Frequency of Gliomatous and Nongliomatous Tumors Within Skull. J. L. Birley.—p. 341.
*Symptomless Acute Mastoiditis: Four Cases. N. Asherson.—p. 343.
Surgical Catgut. A. E. Porritt.—p. 345.
Case of Aleukemic Leukemia. A. W. Brodribb and P. Lazarus-Barlow. —p. 347.
Fatal Hemorrhage in Radical Operation for Trigeminal Neuralgia: Injection Treatment. C. P. G. Wakeley and W. O. Reid.—p. 348.

Grafting of Cornea in Rabbits.—From experimental work covering eight and a half years, Thomas concludes that transplantation of the cornea in rabbits can be successfully carried out. If corneal transplantation is to be applied to man in order to remedy blindness, it is reasonable to assume that methods which have proved inefficient on normal eyes would not be successful when operating on a cornea damaged as a result of previous disease or injury. The author points out, however, that the cornea of a rabbit is thinner than the cornea of man, so that apposition of the margins of the graft has to be all the more accurate. Furthermore, it is more difficult to insure asepsis in the case of a rabbit during the period of healing, as the animal is not under the same control as a patient lying in bed. In this way, slight defects in the healing of the graft are apt to lead to more serious consequences; if, for example, the edge of the graft at one spot overlaps the adjacent cornea, it affords an excellent opportunity for the entrance of bacteria, and septic complications—which are so damaging in their effects —are likely to result. Of the six methods of corneal grafting which he describes, one appears to offer much better chances of success than do the others, so that of the seven rabbits operated on by this method, all of the grafts united, five were transparent, one had a central clear area, and only one was opaque.

Intracranial Tumors.—Birley suggests that the figures arrived at by the only exact method—viz., histologic examination—underestimate the relative frequency of the glioma group. This figure is of great importance clinically because on it largely depends the general prognosis in cases of intracranial tumor. In a series of 190 cases of intracranial tumor, evidence is brought forward to show that the chances of "verifying" a glioma at operation are considerably less than those of verifying a nonglioma tous growth. Whereas verification was dependent on postmortem examination (with or without previous surgical intervention) in 78.7 per cent of eighty gliomatous tumors, craniotomy was successful in verifying 75.5 per cent of forty-five nongliomatous tumors. Of patients dying of intracranial tumor unverified during life, in a large majority the tumor is a glioma. Many cases escape postmortem examination and, accordingly, many gliomas remain unverified. It is suggested that, if metastases and pituitary adenomas are excluded, the glioma is not merely as common as, but is actually two to three times commoner than, all other intracranial neoplasms put together.

Symptomless Acute Mastoiditis.—Asherson states that not all cases of acute suppurative mastoiditis are associated with symptoms. It is possible for such a dangerous condition to be present, even with an intracranial extension such as a perisinuous abscess, and yet for the lesion to be entirely latent as regards symptomatology, though recognizable by the otologist familiar with the protean manifestations of acute mastoiditis. Four cases of acute mastoiditis are reported which show that sagging of the meatal wall may be the only sign or symptom of a suppurative condition in the mastoid process or its extensions (dura or sinus). It could be termed "anterior" mastoid periostitis. Its presence indicates that it is imperative to open the mastoid

forthwith. In both the patients operated on, not only was the mastoid extensively infected but a perisinuous abscess was present as well. It would be easy to overlook the gravity of the sign until a rigor heralded the onset of an infected sinus, or the symptoms of a meningitis supervened. Routine otoscopic examination is important in all ear conditions. No case of acute otitis media can be discharged from observation without an otoscopic examination. Suppuration in the mastoid and intracranial extensions may be present without symptoms. Rapid accumulation of pus in the metatus is a significant sign for operation. In a case of otorrhea any history suggestive of an intracranial extension of the suppuration must be taken seriously, notwithstanding its absence when under observation.

Bull. et Mém. de la Soc. Méd. des Hôpitaux de Paris

47: 1-34 (Jan. 19) 1931

Treatment of Tuberculosis by Cerium and Lanthanum. H. Grenet.—p. 11.
Nephritis with Hyperlipoidemia. L. de Gennes and J. Fouquet.—p. 13.
Diagnosis and Prognosis of Lipoidal Nephrosis: Dissociation of Humoral Syndrome. A. Codounis.—p. 17.
*Case of Associated Tuberculopneumococcal Meningitis. C. Achard and A. Horowitz.—p. 24.
Case of Neuraxitis of Pure Cerebellar Symptomatology Following Chickenpox. J. A. Chavany and A. Chaignot.—p. 28.

Case of Tuberculopneumococcal Meningitis. — Achard and Horowitz report a case of meningitis of fatal evolution in a woman, aged 20. The patient, after a short period of general decline, had an acute meningeal attack. Irregularities of the pulse and vasomotor symptoms seemed pathognomonic of tuberculous meningitis. A lumbar puncture released a yellowish, turbid fluid, the color of which suggested pneumococcal infection. The fluid contained 83 per cent of polymorphonuclear leukocytes. After the injection of antipneumococcal serum the cytologic formula of the cerebrospinal fluid was changed; the fluid contained almost no cells except lymphocytes. Cultures of the original fluid revealed tubercle bacilli. It was impossible to ascertain, even at the necropsy, whether the primary infection was tuberculous or pneumococcal. However, the short period of evolution of the disease and the absence of pneumococci in direct examination of the cerebrospinal fluid made it seem probable that the meninges were first attacked by the tubercle bacilli and that the pneumococcal infection occurred later.

Revue Médicale de la Suisse Romande, Lausanne

51: 1-64 (Jan. 25) 1931

*Benign Lymphocytic Meningitis as Meningeal Form of Epidemic Encephalitis. M. Roch.—p. 1.
Case of Benign Acute Lymphocytic Meningitis. P. Gautier and R. Peyrot.—p. 19.
Case of Benign Lymphocytic Meningitis Accompanied by Herpes. G. Turrettini and R. Choisy.—p. 22.
Tuberculosis in District of Lourenço Marques. A. Perret-Gentil.—p. 25.

Benign Lymphocytic Meningitis as a Form of Epidemic Encephalitis.—Roch reports five cases of benign lymphocytic meningitis. Because of these cases and others that he has observed and because of similar cases reported by numerous authors, he believes that the disease is of fairly frequent occurrence. The most noteworthy feature of the condition is the difficulty of determining its pathogenesis. It is well known that similar meningeal syndromes with lymphocytosis may result from tuberculosis, syphilis, mumps, typhoid, measles, scarlatina, and so on. The symptoms sometimes appear also in icterohemorrhagic spirochetosis. It is possible, therefore, that in a small proportion of the cases under discussion one of these diseases may have existed in a latent form as the cause of the meningitis. Nevertheless, it is certain that in most of the cases there must have been another cause. The authors are inclined to consider these cases as forms of epidemic encephalitis. They base this opinion on the following facts: 1. The polymorphism and the many clinical transformations of epidemic encephalitis. 2. The numerous exceptions to the rule that epidemic encephalitis does not usually produce meningeal reactions. 3. Cases of meningitis analogous to those reported which have been attributed by reliable authors to epidemic encephalitis. 4. Symptoms of peripheral localizations of encephalitis virus observed in various cases, rendering them analogous to peripheral or low forms of epidemic encephalitis. 5. Symptoms such as a set appearance, catatonic attitudes, and rhythmic myoclonias, which are indicative of epidemic encephalitis.

Schweizerische medizinische Wochenschrift, Basel

61: 73-96 (Jan. 24) 1931

*So-Called Tuberculous Bacilluria with Intact Urogenital Organs. R. Rieder.—p. 73.
Relation of Mind to Body: Energetic Nature of Mentality. H. Sahli.—p. 76. C'cn.
Clinical Observations on Scarlet Fever. G. Puliarevitsch.—p. 81.
Method for Determination of Capillary Pressure and Its Results. S. Arnold.—p. 85.
Acromegaly and Diabetes. A. Muhtar and H. Sedat.—p. 87.
Determination of Blood Sugar: Picramic Acid Reaction. K. von Neergaard.—p. 88.
Simple Method for Determination of Sugar Content of Blood. C. Strzyzowski.—p. 89.

So-Called Tuberculous Bacilluria with Intact Urogenital Organs.—Rieder directs attention to the fact that in typhoid, in dysentery, in diseases caused by streptococci or by staphylococci, and in other diseases in which bacteria circulate in the blood, bacteria are occasionally eliminated by the kidneys without causing an infection in them. Whether and under what conditions this also occurs in tuberculosis has not been thoroughly explained as yet. Some authors assume that tuberculous bacilluria always indicates tuberculosis of the kidneys; others think that the kidneys eliminate tubercle bacilli only when they have been injured by toxins or when nephritis exists, and others recognize the possibility of a tuberculous bacilluria in cases of intact renal tissues. The author describes 143 animal experiments in which he tested the urine sediments of 136 tuberculous patients. In 132 experiments, in which the urines of 126 tuberculous patients were tested, negative results were obtained. In eleven experiments performed on ten patients the results were positive. In all of these cases there were clinical signs of a urogenital tuberculosis and the correctness of the diagnosis was corroborated either during operation or during necropsy. The author concludes that the problem cannot be considered as completely solved, but the 143 animal experiments did not demonstrate a tuberculous bacilluria in case of intact urogenital organs. On the contrary, it was always possible to find a tuberculous focus in the organ, whenever the animal experiment revealed a bacilluria.

Policlinico, Rome

38: 1-56 (Jan. 15) 1931. Surgical Section

Volvulus of Stomach. G. Barbera.—p. 1.
*Modifications of Cerebrospinal Fluid in Pott's Disease. L. Docimo.—p. 8.
Experimental Researches on Influence of Thyroid, Testis and Ovary on Cicatrization Process in Wounds. L. di Natale and A. Midana.—p. 21.
Series of Experiments on Ureteral Antiperistalsis. C. Filippa and A. Vitale.—p. 30.
Ossifying Spondylosis of Bechterew Type. M. Scelba.—p. 41.

The Cerebrospinal Fluid in Pott's Disease.—Docimo examined the cerebrospinal fluid in several patients with Pott's disease. He found the humoral syndrome of Sicard and Foix in only one case. After stating and criticizing the theories with regard to the various compressive agents and the corresponding nervous disorders, he concludes that a characteristic of the syndrome is a perimedullary circulatory disturbance, caused by a peridural edema at the site of the conjugate foramina.

Riforma Medica, Naples

46: 2017-2056 (Dec. 22) 1930

*Importance of Mineral Salts in Blood. C. Truneček.—p. 2019.
*Value of D'Amato Hemoclastic Test in Various Infectious Diseases. M. Testolin and D. Pujatti.—p. 2021.
Influence of Extracts of Pancreas, Liver, Spleen and Kidney on Gastric Secretion. B. Boggian.—p. 2023.

Importance of Mineral Salts in Blood.—Truneček, having studied the composition of the blood plasma, states that a solution of the alkalis of the blood is a good conductor of electricity. The mineral salts determine the osmotic tension of the blood plasma. The salts are also catalyzers. These facts are not without importance in therapeutics. As is well known, the aqueous solution recommended by the author as an effective remedy in hypertension and arteriosclerosis, to which was formerly given the name "Truneček serum," is a watery solution of the mineral salts found in the blood plasma. When injected subcutaneously, this mineral serum renders harmless the acid products of combustion that increase its viscosity. By means of remineralization of the organism, the electrical conductivity that the blood plasma and the nerves have lost can be restored.

Value of D'Amato Hemoclastic Test.—Testolin and Pujatti, from a series of researches on the value of the d'Amato hemoclastic test, carried out on patients with various infectious diseases, conclude that the test is positive in nearly all the cases in which it is applied. It is specific for any particular infectious disease and may serve also for the diagnosis and the search for carriers of typhoid bacilli, so far as it can be elicited in such persons.

Rivista di Clinica Pediatrica, Florence

28: 1081-1221 (Dec.) 1930

*Neuro-Endocrine System in Relation to Rickets. G. Guassardo.—p. 1081.
Diagnostic Importance of Certain Cranial Signs in Childhood and Especially of Auscultation of Transmitted Percussion Resonance. B. Trambusti.—p. 1098.
Roentgenography of Respiratory Apparatus of Child After Postmortem Injection of Opaque Contrast Substances. B. Trambusti.—p. 1110.

Neuro-Endocrine System in Relation to Rickets.—Guassardo brings out that in the pathogenic interpretation of rickets, in addition to the metabolic changes in the tissues, one must consider the hormones as having undergone particular changes with relation to the needs of the person at a given age. The rachitigenic agents act by changing the physicochemical conditions of the cells of the various tissues, and particularly of those glands that control the exchange of phosphorus and calcium, thereby diminishing their metabolic activity. In order that rickets may develop, two deficiency conditions must then obtain: one in the tissues and the other in that part of the neuro-endocrine system that regulates the exchange of phosphorus and calcium. For the genesis of rickets, two predispositions are therefore necessary: one general pertaining to age and one specific pertaining to the biologic individuality of the person; hence the importance of the constitutional element in the etiopathogenesis of rickets.

Beiträge zur klinischen Chirurgie, Berlin

151: 171-356 (Dec. 27) 1930

*Experimental Researches on Etiology of Appendicitis. E. Eichhoff and W. Pfannenstiel.—p. 171.
*Importance of Ultraviolet Rays in Surgery. O. Winterstein.—p. 203.
Megacolon: Pathogenesis and Remote Results of Treatment. E. Askmark.—p. 267.
Experience with Hohn's Culture. W. Haase.—p. 318.
Statistics of Cancer in Hamburg. W. Schwanke.—p. 326.
Böhler's Method for Treatment of Fractured Tubular Bones. R. Syller.—p. 331.

Researches on Etiology of Appendicitis.—Eichhoff and Pfannenstiel found mostly *Bacillus coli*, enterococcus and *Clostridium aerogenes-capsulatum* in thirty-nine appendixes with an acute inflammation, in thirty-six appendixes with a chronic inflammation, and in six normal appendixes. The difference in the cases consisted in the quantity and in the biologic properties of these bacteria. Among the colon bacilli, those producing an intense fermentation of lactose prevailed in cases of acute appendicitis. On further examination, *Streptococcus pyogenes* appeared to be a modified enterococcus. The presence of *Clostridium aerogenes-capsulatum* was constant. True *Streptococcus pyogenes* and pneumococcus were absent. Experiments were conducted on rabbits because their appendixes proved to contain the same bacilli as the human appendix. Cultures of *Bacillus coli*, enterococcus and *Clostridium aerogenes-capsulatum*, obtained from an acutely inflamed human appendix, were injected in the animals. In a series of rabbits, first an incomplete stenosis of the appendix was produced and then a single or a combined culture was injected; in a part of them the appendical mucosa was injured. None of the animals became sick, and no inflammatory lesions were later found on microscopic examination. In another series of thirty-eight rabbits, a complete stenosis of the appendix by means of ligation was produced. No bacteria were injected in six of them. The animals were killed four days after the operation; a typical "appendicitis" with perforation and a diffuse suppurative peritonitis were found in two of them. *Clostridium aerogenes-capsulatum* prevailed in 77 per cent of the cases. In three animals a necrotic focus was located on the appendical wall; it was evidently of mechanical origin, having developed under the influence of the stasis and a gradually increasing internal pressure. There was no acute inflammatory process. In another series of thirteen rabbits, with an artificially produced complete stenosis, two were injected with a culture of *Bacillus coli;* a circumscribed necrosis was found in the appendix, but there were no appreciable inflammatory lesions. Five animals were injected with a culture of enterococci; also a considerable stasis was found in the appendix, but there were no inflammatory lesions. Two animals were injected with a culture of pneumococci; no appendicitis developed. Four animals were injected with a culture of *Streptococcus pyogenes* obtained from patients with a severe phlegmon. Three of them died on the third day after the injection; a diffuse peritonitis, intense inflammatory lesions, necrosis and perforation of the appendical wall were present. A third series of nineteen rabbits with a complete appendical stenosis were injected with a culture of anaerobic bacteria alone or mixed with aerobic bacteria. All the animals became gravely sick; some of them died the next day. A diffuse peritonitis and inflammatory lesions were found on necropsy. Thereupon tests were made with an antitoxic gas-gangrene serum. Cultures of the species of bacteria from which the serum was prepared were injected in the stenosed appendix of the animals; then the serum was injected intramuscularly. Rabbits thus treated became sick but later recovered, while all the controls died. The animals were killed; at necropsy, lesions of a severe appendicitis were present; they proved to be encapsulated. The authors conclude that the primary development of a mucosal phlegmon in an obstructed appendix is occasioned chiefly by *Clostridium aerogenes-capsulatum* and *Streptococcus pyogenes* and their toxins and not by products of fermentation. The mechanical injury to the appendical mucosa appeared to be without importance in the etiology of "appendicitis" induced in animals.

Bactericidal Action of Ultraviolet Rays.—Winterstein's researches aimed to explore the resistance of various microorganisms to ultraviolet rays. The results confirmed that the rays not only impair the growth of pathogenic and nonpathogenic micro-organisms but also destroy them. Resistance to the rays differed in micro-organisms of one and the same species as well as in various species. For fresh streptococci, impairment of growth occurred after from ten to twenty seconds of irradiation; their destruction, after from one to five minutes. For streptococci six hours old, the impairment of growth occurred after from twenty to forty seconds; their destruction, after from one to ten minutes. For fresh and six hour old enterococci, impairment of growth occurred in less than one minute; their destruction in from one to five minutes. In fresh *Sarcina lutea*, impairment of growth occurred after one minute and destruction after three minutes; in six hour old bacteria, impairment of growth was observed after three minutes and death within from twenty to thirty minutes. Fresh micrococci were impaired in growth after one minute and death occurred after thirty minutes; impairment in growth of six hour old micrococci occurred after from one to three minutes and destruction soon after thirty minutes. Impairment in growth of fresh *Staphylococcus pyogenes-aureus* belonging to three species occurred after from one to three minutes, and destruction after from one to thirty minutes; the six hour old cocci were impaired after from one to five minutes and killed after from thirty to sixty minutes, or even later. Fresh *Staphylococcus pyogenes-albus* was impaired in growth after thirty seconds and destroyed after one minute; the six hour old cocci were impaired in growth after fifty seconds and killed after three minutes. Fresh *Bacillus coli* was impaired in growth after from a half to one minute and destroyed after from five to thirty minutes; the six hour old bacilli were slightly impaired in growth after from one to five minutes and destroyed after from thirty to over sixty minutes. Destruction of fresh and of six hour old *Bacillus pyocyaneus* occurred after five minutes and sixty minutes, respectively; impairment in growth occurred in less than one minute. Fresh anthrax bacilli were impaired in growth in from one to three minutes and destroyed after twenty minutes; the six hour old bacilli were impaired in growth after three minutes and were not yet destroyed after sixty minutes. Impairment in growth of fresh and of six hour old *Bacillus subtilis* occurred after one minute and destruction after twenty and thirty minutes, respectively. Impairment in growth of fresh and of six hour old *Bacillus mesentericus* occurred in less

than one minute; they were destroyed after five and twenty minutes, respectively. The fresh and six hour old diphtheria bacilli were impaired in growth after twenty minutes; no destruction of the bacilli occurred even after sixty minutes. A pronounced impairment in the growth of tubercle bacilli occurred after ten minutes; the bacilli were not yet destroyed after sixty minutes. *Clostridium butyricum* was impaired in growth after twenty seconds and destroyed after one minute; six hour old *Clostridium* was impaired in growth after fifty seconds and destroyed after one minute. The ultraviolet rays proved to destroy bacilli of the skin, without causing injury to the latter; this depended on the individual and local resistance to the rays. The bactericidal action of the rays on bacteria present in the air was confirmed; thus the rays may be used exceptionally in operating rooms and in wards. The rays appeared unusable for sterilization of infected suture materials, because their action is superficial. Only insignificant results can be expected from the action of ultraviolet rays on bacilli present in wounds; the effect of the rays appeared nil in cases of erysipelas. Histologic changes occasioned in the epidermis by ultraviolet rays were evidenced in cases of acute dermatitis as superficial inflammation, destruction of the epidermis and its regeneration. A single ultraviolet irradiation, at a dose near that producing burns, but with a moderate bactericidal action, was without effect on the healing of freshly sutured wounds. Clinical observations indicated that the action of the rays on the epithelization of wounds was slight and not constant.

Deutsche medizinische Wochenschrift, Berlin

57: 89-132 (Jan. 16) 1931

Capillaroscopic Control of Cure of Lupus. Bettmann.—p. 89.
Hypertrophy, Atrophy and Degeneration Caused by Function: Observations on Athletes. W. Bätzner.—p. 91.
Vaccination with B C G and General Mortality of Infants: Reply to Berghaus. A. Calmette.—p. 93.
*Results of Active Vaccination Against Diphtheria in Berlin. E. Seligmann.—p. 96.
Clinical Aspects of Amyloid Kidney. M. Rosenberg.—p. 99.
*Treatment of Acute Epidemic Poliomyelitis During the Preparalytic Stage by Means of Convalescent Serum. H. Eckhardt.—p. 101.
Antimony Therapy in Rat-Bite Fever. J. Schockaert.—p. 103.
Minimal Dosage of Irradiated Substances for Prophylaxis of Influenza. P. Bamberger.—p. 104. C'en.

Vaccination Against Diphtheria in Berlin.—Seligmann shows statistically the efficacy of vaccination against diphtheria. He found that the morbidity of vaccinated children was considerably below that of nonvaccinated children, and the fatality statistics correspond with this. However, in the conclusion he emphasizes that the vaccines employed in Berlin are not of a sufficient antigenic potency and that efforts should be made to find preparations with an increased immunizing action but which do not cause more marked reactions. It would likewise be desirable to be able to complete the immunization by one vaccination; but, until such a vaccine is found, it should be the rule to administer all diphtheria vaccines three times.

Treatment of Epidemic Poliomyelitis with Convalescent Serum.—Eckhardt asserts that the report on the epidemic of acute poliomyelitis in Ontario in 1929 deserves especial attention, because of the favorable therapeutic results that were obtained. This report stresses the significance of an early diagnosis and of the prompt administration of convalescent serum. Early diagnosis is especially difficult in sporadic cases. The paralytic symptoms develop between the second and the fifth day. During the preparalytic stage there exist fever, fatigue and a feeling of weakness in certain groups of muscles. In the majority of cases meningeal symptoms develop, such as stiffness of the neck, aversion to moving the vertebral column, hyperesthesia and a tendency to profuse perspiration. In this stage the diagnosis can be corroborated by examination of the spinal fluid. During the epidemic in Ontario it was found that, if convalescent serum was administered during the preparalytic stage, complete recovery resulted in more than 80 per cent of the cases, and the patients who received the serum on the first day all recovered completely. The report shows also that arrangements should be made to have convalescent serum on hand when an epidemic develops. Because cases of acute poliomyelitis are usually especially numerous during the months from July to October the author advises that, during the summer months, depots for convalescent serum be established in several parts of the country. The convalescent serum should be obtained from children who have had an attack of acute poliomyelitis during the last five years.

Klinische Wochenschrift, Berlin

10: 49-96 (Jan. 10) 1931

Biologic Processes in Healing of Bone Fractures. M. Zondek.—p. 49.
*Nature and Causes of Thrombosis and Embolism. A. Dietrich.—p. 54.
Relations Between Insulin and Epinephrine in Human Organism. B. Kugelmann.—p. 59.
Causes of Malignant Course of Diphtheria. J. Koschate.—p. 62.
Behavior of Fats While Passing Through Placenta. W. Bickenbach and H. Rupp.—p. 63.
Diuresis Caused by Conditioned Reflex. H. Marx.—p. 64.
Influence of Adenosinephosphoric Acid on Heart Action. H. Rothmann. —p. 67.
*Treatment of Pernicious Anemia by Means of Stomach Preparations in Cases Refractory to Liver Therapy. V. Stockhausen.—p. 67.
*Experiences with Meinicke Clarification Reaction in Its Latest Modification and Its Clinical Value. A. Stertenbrink.—p. 68.
Ten Years' Experience with Friedmann's Tuberculosis Remedy. F. F. Friedmann.—p. 70.
Serious Complications Following Treatment of Hernia by Means of Alcohol Injections. H. Jacobi.—p. 71.

Nature and Causes of Thrombosis and Embolism.—Dietrich first expresses his opinion with regard to the recent reports that thrombosis and embolism are increasing. He thinks that numbers alone do not prove the greater incidence but that other incalculable factors might be involved. The structure of the thrombus reveals the history of its development. The author differentiates between two groups of thrombi, local and progressing. The progress of a thrombosis is of greatest significance because this factor causes the serious circulatory disorders and involves danger of embolism. The author further discusses the various theories of the pathogenesis of thrombosis and embolism. He thinks that the fact that more than 76 per cent of all thrombi develop in the veins, and especially in regions where the circulatory conditions are least favorable, proves that a retardation in the blood stream or conditions of stasis favor their development. He further discusses the causal significance of the changes in the blood and, finally, the changes in the walls of the vessels.

Pernicious Anemia Treated with Stomach Preparations.—Stockhausen gives the clinical histories of three patients with pernicious anemia. After liver treatment had failed they were successfully treated with stomach preparations. The author considers these cases as a new proof for the correctness of Castle's theory.

Experiences with Meinicke Clarification Reaction.—Stertenbrink points out that the technic first recommended by Meinicke for his clarification reaction often resulted in nonspecific partial reactions in such conditions as arteriosclerosis, chronic polyarthritis, tuberculosis, cancer, pleurisy, pneumonia, influenza and erysipelas. Later several changes were suggested so as to make the reaction more specific for syphilitic infections. The author asserts that the latest modification of the technic of the clarification reaction, which he employed in the examination of 903 serums, is highly specific for syphilis. If this improved technic is employed, the number of nonspecific reactions is small. In regard to specificity, the Meinicke clarification reaction is superior to both the Wassermann reaction and the Meinicke turbidity reaction. For this reason and because of the simple technic, the author recommends it as a control reaction in the hospital laboratory.

Medizinische Klinik, Berlin

27: 41-78 (Jan. 9) 1931

Position of Midbrain in Psychocerebral Apparatus. E. Gamper.—p. 41.
Hygienic Conditions in Large Cities. M. Hahn.—p. 45. C'en.
Progress in Dietary Therapy. H. Günther.—p. 48.
*Acute Suprarenal Insufficiency with Aspects of Acute Peritonitis. G. Mandl.—p. 50.
Are Syphilitic Infections Increasing Again? L. Lilienthal.—p. 52.
Hematologic Changes in Functional Disturbances. E. Hoffstaedt.—p. 52.
*Acute, Genuine Hematoporphyria with Acromegaloid Symptoms and with Peculiar, Chronic, Deforming Disease of Joints. S. Becker.—p. 54.
Psychogenic Regulation of Functioning of Viscera and of Metabolism. N. Santos and Jaso.—p. 55.
Calcium Medication in Nurslings and Small Children. P. Freud.—p. 59.

Suprarenal Insufficiency with Aspects of Acute Peritonitis.—Mandl reports the clinical history of a man, aged 85. The patient was well nourished, and, considering his advanced

years, he was of unusual mental alertness. Twelve years previously his leg had been amputated on account of tuberculosis, but after that he felt well again, with the exception of several attacks of pruritus, which were treated as pruritus senilis. A week before the patient was brought to the hospital, he had lost his appetite after what appeared to be a slight cold. The patient was nauseated and had an increased temperature. For three days this condition was not changed. Then the patient had chills, developed a high fever, and complained of severe pains in the epigastric region. He vomited several times, but on the following day the temperature was only slightly above normal. The vomiting attacks continued, even when the patient refrained from taking food. When he was brought to the hospital he showed some symptoms of localized peritonitis following perforation of a duodenal ulcer. However, the good general condition, the absence of hiccups, the slow pulse and the absence of fever spoke against this. The patient died on the following day. The necropsy revealed complete caseation of both suprarenals; also signs of old tuberculous polyserositis, old apical indurations, and arteriosclerosis. The vessels at the base of the brain showed only a slight sclerosis. The skin did not show increased pigmentation, and the oral mucous membrane was not pigmented. The destructive process, which led to total caseation of both suprarenals, had begun many years before. However, this destruction did not become manifest as Addison's disease. There were no signs of chronic exclusion of the suprarenals, neither pigmentation nor adynamia, nor the usual intestinal disorders. Instead there developed suddenly those symptoms which have been referred to by many clinicians as pseudoperitonitis in acute suprarenal insufficiency. The author points out that in spite of the fact that, similar cases have been observed before, the opinions are still divided with regard to the causes and development of these peritonitic or ileus-like manifestations. He reviews several cases that had been studied by other authorities. This review indicates that the clinical symptoms of pseudoperitonitis may develop in acute as well as during gradual destruction of the suprarenals. In the last part of the article the author directs attention to the occasional attacks of pruritus, to which the patient had been subject. Since these attacks usually developed after slight colds, it appears possible that they were the result of a temporary disturbance in the suprarenal system, which in turn had been caused by a slight infection. The case was reported in order to direct attention to this form of pseudoperitonitis, which, if not correctly diagnosed, may be the cause of unnecessary surgical interventions.

Acute Hematoporphyria with Acromegaloid Symptoms.—The case reported by Becker shows three groups of symptoms: porphyria, pathologic growth of the type of acromegaly and chronic ostearthritis of a peculiar character. He thinks that such a combination has never before been described. He also stresses that there were considerable deviations from the genuine acromegaly, as well as from the known forms of porphyria. For this reason a strict diagnostic classification was not possible.

Münchener medizinische Wochenschrift, Munich

27: 79-116 (Jan. 16) 1931

Early Operation. E. Melchior.—p. 79. C'td.
Aspects of So-Called Endocrine Arthritis. F. Leeser and J. Simson.—p. 84.
Influence of Products of Soy Beans on Gastric Secretion. Nissen.—p. 88.
Estimation of Stimulation of Gastric Secretion by Substances Rich in Protein. H. Kalk.—p. 90.
*Therapy of Hemophilic Hemorrhages. H. Dimmel.—p. 92.
*Liver Therapy of Hemolytic Icterus Complicated by Pulmonary Tuberculosis. W. Rosenberg.—p. 93.
Methylthionine Chloride, a Simple but Extremely Sensitive Reagent for Demonstration of Bilirubin. K. Franke.—p. 94.

Therapy of Hemophilic Hemorrhages.—Dimmel reports the clinical history of a hemophilic boy, aged 12. At the age of 8 he had had a prolonged hemorrhage following fracture of the nasal bone. The year after he had been under hospital treatment on account of subcutaneous hemorrhages. Now, at the age of 12, he had a severe hemorrhage following tooth extraction. After the usual hemostatics failed, a lactic acid solution was applied locally to the alveolus and was used as a mouth wash. Several hours later the hemorrhage ceased. Because the patient was weak and anemic, a blood transfusion was made. When several days later the sutures were removed from the transfusion wound, an inflammation of the tissues was noted, the patient developed high fever, and, on the day following, the wound commenced to bleed. Tamponade was at first ineffective until a tampon was applied that had been saturated with a lactic acid solution. The author realizes that one case cannot be considered sufficient evidence for the efficacy of this method. However, because the method is painless and simple, he thinks that it should be given a trial in other cases of hemophilia. He recommends weak solutions of from 2 to 4 per thousand.

Liver Therapy in Hemolytic Icterus Complicated by Tuberculosis.—Rosenberg describes two cases of hemolytic icterus that were complicated by open, pulmonary tuberculosis. The surgical therapy of the pulmonary tuberculosis brought good results in both cases. However, the hemolytic icterus progressed unhindered. Liver therapy had not the least influence on the clinical and hematologic aspects of hemolytic icterus.

Münchener medizinische Wochenschrift, Munich

78: 49-88 (Jan. 9) 1931

*Fog Catastrophe in Industrial Section South of Liége. W. Storm van Leeuwen.—p. 49.
*General Symptom in Tumors of Brain. W. Klimke.—p. 50.
Frequency of Iodine Thyrotoxicoses Caused by Iodized Salt. H. Zimmermann.—p. 52.
Causes of Success and Failure in Ray Therapy of Exophthalmic Goiter. P. Hess and H. Schlecht.—p. 55.
Unilateral Exophthalmos in Exophthalmic Goiter. H. Reiners.—p. 57.
Infants in Tropical Countries Developing Fever as Result of Too Much Clothing. Deppe.—p. 58.

Fog Catastrophe in Industrial Section South of Liége.—Storm van Leeuwen describes the fog catastrophe in the valley of the Meuse, during which hundreds of persons became ill and sixty-three died. On December 1, a Monday, a fog developed in Belgium and in the Netherlands. In the valley of the Meuse the fog was especially heavy, and on account of an absolute calm it did not lift until Thursday afternoon. On Friday it again became foggy and it remained so until Sunday. On Tuesday and Wednesday the fog was especially heavy. On Wednesday a large number of persons complained of irritations in the nose, mouth, throat, trachea and bronchi. The mucous membranes were red and swollen. Necropsies later revealed that these inflammations reached down into the large ramifications of the bronchi. The patients coughed and the respiration frequency was more than 40 a minute. In the serious cases, dyspnea, dilatation of the heart, high pulse frequency and cyanosis developed. Signs of pneumonia were not present. Injections of epinephrine brought temporary improvement, and cardiac stimulants were also administered. Among those who were seriously ill, and especially among those who died, there were many old persons, also persons with asthma, bronchitis and heart disease. However, it was also noted that young persons who had been healthy before became seriously ill and that many others felt an unpleasant irritation in the throat. The sixty-three fatalities all occurred within twenty-four hours and in the narrow valley south of Liége. In discussing the causes of the catastrophe the author points out that the opinion that the heavy, cold fog is irrespirable and that the fatalities were due to suffocation from lack of oxygen is not tenable because heavy, cold fogs are quite frequent on the sea coast of the Netherlands, and yet there are no fatalities. The theories of war gases and of Sahara sands are likewise dismissed. In traveling through this region the author noted numerous factories, such as zinc industries, superphosphate factories and other industrial plants. It may be assumed that even under normal conditions the air contains irritative substances such as sulphur dioxide and hydrofluoric acid. It is also known that this region is fit for neither agriculture nor cattle raising. That this is due to the presence of the factories is proved by the fact that the cattle raisers had a lawsuit against the manufacturers and were paid damages. The cold and heavy fog and the absolute calmness during the first days of December prevented ventilation, and it is also possible that some of the factories discharged an abnormally large amount of poisonous substances during these days. This catastrophe teaches that the harmfulness of gases discharged by certain industries should not be estimated on an ordinary day but that the concentrating effects of fogs should be taken into consideration.

General Symptom in Tumors of Brain. — Klimke describes a reflex that Kehrer observed in a large number of patients with cerebral or meningeal tumors. It is a typical reaction following pressure on, what Kehrer termed, the deep occipital point. The examination is made in the following manner: The examiner stands behind the patient and under constant pressure with the forefinger he goes from the linea nuchae suprema vertically toward the point known as the point of exit of the nervus occipitalis major and still farther downward. Then a point is reached at which, by way of reflex, the head of the patient is bent backward and toward that side of the head on which the occiput is pressed. Either now or a little later the patient's head becomes red; he complains of severe pains and attempts to escape the pressure. Kehrer considers the flight reflex as more important than the complaints of pains. He also emphasizes the significance of the pressure sensitivity at the points of exit of the trigeminus. In order to divert the attention of the patient away from these points, the examiner touches first indifferent points of the facial portion of the skull, such as the forehead, the nose and the region of the malar bone and of the jaw, and determines the absence of pains and of flight reflexes. Then as if by accident the examiner touches with the tip of the finger the six points of exit of both trigemini. While in trigeminal neuralgias, in migraine and in similar conditions the specific pressure reaction is limited to one or two branches of one side of the trigeminus, in tumors of the brain and in cerebrospinal meningitis usually all three branches of both sides are sensitive to pressure.

Wiener klinische Wochenschrift, Vienna

44: 65-96 (Jan. 16) 1931

Postoperative Shock. H. Eppinger.—p. 65.
Present Status of Early Diagnosis of Cancer of Stomach. W. Berger. —p. 71. C'td.
*Percutaneous Active Diphtheria Immunization According to Löwenstein. E. Nobel.—p. 75.
*Antisyphilitic Treatment as Cause of Circulatory Disturbance. O. Glassberg and K. Steiner.—p. 76.
Antagonism Between Sulphur and Epinephrine. D. Campanacci.—p. 79.
Possibilities of Organotherapy in Pulmonary Tuberculosis. F. Mattausch. —p. 81.
Surgical Therapy of Cholelithiasis. P. Walzel.—p. 84.
Results of Roentgen Therapy of Surgical Tuberculosis. J. Palugyay.—p. 85.

Percutaneous Active Diphtheria Immunization According to Löwenstein. — Nobel reports his experiences with Löwenstein's diphtheria ointment, which he employed for immunization of 206 children. The children were subjected to three inunctions, which were made after intervals of two weeks. To determine the efficacy, Schick tests were made. The author comes to the conclusion that the percutaneous immunization against diphtheria fulfils two claims made by Löwenstein for his method; namely, that it is harmless and simple in its application. However, the Schick reactions indicated that in regard to the efficacy, the inunction method is inferior to other methods.

Antisyphilitic Treatment as Cause of Thrombosis of Superior Mesenteric Artery.—Glassberg and Steiner report the clinical history of a man, aged 53. The time of the syphilitic infection was unknown, but before 1929, when he underwent a mercury and arsphenamine cure, the patient had never received antisyphilitic treatment. Following the last arsphenamine injection the patient felt nauseated, and the skin of his face, of the joints of his hands and of the lower extremities became reddish and swollen. The antisyphilitic treatment was discontinued and at this time the patient came under the authors' observation. Following examination the case was diagnosed as tabes dorsalis and syphilitic mesaortitis. After the cutaneous inflammations and dermatitis had been partially counteracted the patient suddenly developed the symptoms of appendicitis. Operation revealed gangrene of the cecum. The entire gangrenous portion of the bowel was exteriorized. A resection was considered inadvisable on account of the weakened condition of the patient. He died three and one-half days after the operation. The necropsy revealed thrombosis of the superior mesenteric artery and hemorrhagic infarction of nearly the entire ileum, necrosis of the mucous membrane in this region and fresh, diffuse, suppurative peritonitis; also syphilitic mesaortitis, fatty liver, pyonephrosis, suppurative cystitis, cholelithiasis, hemolytic icterus and arsphenamine dermatitis. The authors consider the thrombosis as the result of the action of arsphenamine during renal and circulatory disturbances. They discuss the factors that may lead to thrombosis of larger vessels by the use of arsphenamine, and they emphasize the necessity of considering the condition and function of the internal organs before antisyphilitic treatment is begun.

Zentralblatt für Gynäkologie, Leipzig

55: 65-128 (Jan. 10) 1931

Hyperplasia of Endometrium Caused by Hyperfunctioning of Anterior Lobe of Hypophysis. O. Frankl.—p. 68.
Pathology of Twins. J. Novak.—p. 69.
Observations and Statistics in Eclampsia. F. Engelmann.—p. 78.
Method of Statistics in Eclampsia. P. Rissmann.—p. 80.
*Reversible (Temporary) Sterilization of Women by Crushing of Ampulla of Uterine Tubes. H. Naujoks.—p. 81.
Cervical or Corporal Cesarean Section in Placenta Praevia? E. Rotthaus. —p. 89.
Rupture of Uterus with Tearing of Bladder After Former Cervical Section. K. Jäger.—p. 94.
Local Infiltration Anesthesia in Abortion. P. E. Heine.—p. 100.
Method of Hemostasis. K. Logothetopulos.—p. 102.
Diagnosis of Coiling of Umbilical Cord Around Neck of Fetus. N. Bloch. —p. 103.

Reversible Sterilization of Women by Crushing of Ampulla of Tubes.—Naujoks discusses the various methods that have been recommended for the temporary exclusion of the conception capacity. Sterilization produced by irradiation he considers inadvisable, because the correct dosage as well as the duration of the sterility cannot be definitely determined and, moreover, injury of the offspring might result. In regard to the surgical methods he states that to these the term reversible sterilization should be applied in preference to temporary sterilization. In 1924 he already could list twenty-four operative methods. He then gives a short discussion of those which have been described since then, and after that describes his own method, which is a modification of Madlener's method. Madlener employed his method of crushing the tubes for permanent sterilization. The author modifies this method by crushing the tube not in the middle but near the ostium abdominale, so that only the infundibulum is cut off. After the tube has been crushed by means of Roux's enterotriptor, two silk threads are passed through the mesosalpinx, and they are tightly fastened around the tube at the ends of the crushing furrow. Care should be taken that the wall of the tube is not cut with the thread. That this method of sterilization is quicker, simpler and more reliable than the burying of the tube or of the ovary is evident. However, the main advantage is the easy reversibility, which is done by the simple excision of the ampulla by means of the diathermy knife.

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Tubo-Ovarian Pregnancy. A. Westman.—p. 130.
*Dysthyroidism of Mother and Anencephaly of Fetus. E. Debiasi.—p. 135.
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Manoilov's Pregnancy Reaction in Blood Serum. B. N. Moschkow.—p. 154.
Unusual Increase in Lymph Follicles of Endometrium. H. O. Neumann. —p. 156.
Technic of Use of Forceps in Mentoposterior Face Presentation. A. Haupt.—p. 162.
Puerperal Inversion of Uterus of Eight Years' Duration Cured by Combined Vaginal Abdominal Operation. C. Flechtenmacher, Jr.—p. 163.
Hemorrhage of Both Mammae During Lactation. F. Krauss.—p. 165.

Dysthyroidism of Mother and Anencephaly of Fetus.—Although anencephaly as such cannot be considered a rarity, Debiasi considers it as extraordinary that two such cases should be observed at the same time. He reports the clinical histories of two gravidas, both of whom had an enlarged thyroid and both of whom on the same day gave birth to an anencephalic fetus. That both fetuses were of the female sex is not surprising, since it is known that this form of teratism is most frequent in females. In regard to the teratogenesis of anencephaly, the opinions are still divided. The author reviews several of the theories. Because both the gravidas whom he observed had goiter and dysfunction of the thyroid, he asks whether there might be a relation between this dysthyroidism in the mothers

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and the anencephaly in the fetuses. He considers it possible but not absolutely certain. In reporting these cases he only wished to contribute to the casuistics of anencephaly, and he thinks that on a larger material it might be possible to determine whether endocrine dysfunction in the mother is a pathogenic factor in anencephaly.

Aschheim-Zondek's Reaction in Pathologic Pregnancy.—According to Wladika it is now certain not only that the Aschheim-Zondek pregnancy reaction indicates a normal pregnancy but also that it is an indicator for the presence of living chorial tissues in the organism. It does not matter whether the chorial tissues are intra-uterine or extra-uterine, whether the placental tissues are normal or whether they are degenerated, as in the case of cystic mole or of chorio-epithelioma. The author reports his experiences with the reaction in extra-uterine gravity as well as in cases of cystic mole. He concludes that the reaction is a valuable diagnostic and prognostic aid. In doubtful cases of extra-uterine pregnancy it permits a definite diagnosis in from three to five days. Thus the operation can be made early, and the patient is no longer exposed to the danger of a sudden intraperitoneal hemorrhage. In instances of cystic mole, which in 10 per cent of the cases lead to chorio-epithelioma, continuous biologic control of the urine is necessary. This, in combination with the careful observation of the clinical symptoms, will indicate the most favorable time for removal of a primary focus of chorio-epithelioma.

Russkaya Klinika, Moscow

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Development of Tumors in Children. V. Onosovskiy.—p. 9.
Achondroplasia in Case of Congenital Syphilis. V. Fedotov and A. Braitsev.—p. 17.
Case of Myxedema in Child. M. Kazantseva.—p. 21.
Changes of Blood in Experimental Sepsis. V. Tarasov.—p. 39.
*Blood Coagulation and Erythrocyte Sedimentation in Hypertonia. F. Borisenko.—p. 51.
*Connection Between Acid-Base Balance and Condition of Gastro-Intestinal Tract. N. Kevdin and F. Lopachuk.—p. 84.
*Influence of Intravenous Injections on Constitution of Blood. L. Sirota.—p. 91.
*Etiology of Intra-Abdominal Adhesions. E. Shakhbazyan.—p. 104.
Case of Acute General Ataxia. D. Shamburov.—p. 117.

Colloidochemical Reactions of Blood in Cases of Renal Hypertonia.—Sedimentation of the erythrocytes and coagulation of the blood were studied by Borisenko in sixty-six patients with chronic nephritis, in nineteen with arteriosclerosis and in eight healthy persons. The results indicated that there is no connection between blood pressure, blood coagulation and sedimentation of erythrocytes. The coagulation of blood appeared more accelerated and the reaction of sedimentation of erythrocytes more pronounced in patients with a chronic nephritis than in those with arteriosclerosis. Hence the phenomena may serve for diagnosis of the origin of hypertonia. In renal diseases the tests of blood coagulation and of sedimentation of erythrocytes revealed considerable disturbances of the protein and the fat metabolism, whereby the proteins of globulins, especially of fibrinogen, possessing a low dispersion, were considerably increased. Since these proteins readily combine with water, a decrease of the excretion functioning and the hypertonia may not be due to lesions of the glomeruli but may be explained by the fact that the water does not reach them, being closely combined with the tissue colloids. Changes in the composition of the plasma, whereby proteins of a low dispersion become predominant, proves to be a defense reaction of the organism, favoring its restoration.

Connection Between Acid-Base Balance and Condition of Gastro-Intestinal Tract.—Kevdin and Lopachuk have examined the alkali reserve of the blood in forty-seven healthy persons, in forty-six with a gastric disease and in forty with other diseases. In eighteen of twenty-nine patients with a gastric ulcer, the alkali reserve proved frequently increased, especially in patients with gastric hyperacidity. The alkali reserve increased under the influence of gastric secretion; it decreased under the influence of intestinal, hepatic and pancreatic secretions. Hence the gastro-intestinal tract appeared to be a contributing factor in the regulation of the acid-base balance.

Influence of Intravenous Injections on Blood.—Five patients, who have recovered from gonorrhea, were injected with physiologic solutions; five patients with exanthema, with a 10 per cent solution of calcium chloride and five others with a 10 per cent solution of sodium bromide; five patients with lichen were injected with a 20 per cent solution of sodium salicylate; five patients with gonorrhea with a 40 per cent solution of methenamine, and five syphilitic patients with neoarsphenamine. From ten to thirty minutes after the injections (except those of methenamine) young forms of blood corpuscles were found, indicating changes in the hematopoietic organs (lymphatic system). In the first ten minutes after injections of physiologic solution, calcium chloride or methenamine, the number of lymphocytes decreased while that of segmented and of other forms increased. The number of lymphocytes increased after injections of neoarsphenamine, sodium bromide and sodium salicylate. The number of eosinophils increased after injections of calcium chloride, neoarsphenamine and methenamine; it decreased after injections of physiologic solution, sodium bromide and sodium salicylate. A gradual decrease in the number of monocytes was especially marked after injections of neoarsphenamine. On account of these changes in the blood, Sirota draws the conclusion that intravenous injections should be used more carefully.

Etiology of Intra-Abdominal Adhesions.—Shakhbazyan has verified the influence of an induced abdominal hemorrhage on formation of adhesions in four dogs. In two instances, the blood was completely resorbed; there were no adhesions in the abdominal cavity. Adhesions were present in two other instances in which the peritoneum was simultaneously injured. Therefore the author agrees with the theory that injury of the peritoneal endothelium occasioned by the removal of blood favors the formation of adhesions more than does the presence of the blood in the abdominal cavity. Infection is another factor contributing to the formation of adhesions. In further experiments the intestinal peristalsis was stimulated by subcutaneous injections of pilocarpine or physostigmine; the increased peristalsis proved to prevent the formation of adhesions usually following the introduction of Heinz's solution. An increased peristalsis was unable to prevent the recurrence of adhesions since their division caused injury of the peritoneal endothelium. In another series of experiments, sterile pus proved also to be ineffective in the prevention of such a recurrence. Experiments aiming to ascertain the connection between the virulence of bacilli and the formation of intra-abdominal adhesions were made in rabbits. Two cultures of staphylococci of different virulence were used for this purpose. It appeared that injection of a strong culture induced the formation of peritoneal adhesions, while no adhesions developed after the injection of a weak culture. Injections of endotoxins of killed cultures caused peritoneal adhesions. Constitution may be a factor in intra-abdominal adhesions as it is in other pathologic processes; but so far it has not yet been established whether the predisposition to adhesions is more pronounced in a strong or in a weak organism. The extension of the adhesions frequently paralleled that of the surgical trauma.

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8: 387-493, 1930

*Carbohydrate Metabolism and Roentgen Therapy in Cases of Exophthalmic Goiter. E. Mojarova.—p. 409.
*Roentgen Treatment of Syringomyelia. K. Kolyu and A. Rusinov.—p. 427.
Bronchography for Differentiation of Tuberculous Cavity from Bronchodilatation. A. Katsman and I. Novikov.—p. 437.
Roentgenograms of Deformed Costovertebral Joints. N. Devyatov.—p. 445.
Cases of Chronic Bone Abscess. A. Mariupolskiy.—p. 455.
Case of Generalized Hyperplastic Periostitis. L. Protas.—p. 463.

Influence of Roentgen Treatment on Carbohydrate Metabolism of Patients with Hyperthyroidism.—Mojarova's observations were made on ninety patients, seventy-four women and sixteen men. Hyperglycemia was found in seventy, hypoglycemia in fourteen, and in six the amount of the blood sugar was about normal. While hyperglycemia was more frequent in men, hypoglycemia was mostly observed in women. Spontaneous glycosuria occurred in 6 per cent of the patients. Exophthalmic goiter was present in fifty-six patients, and hyperthyroidism in twenty-eight. In patients with an exophthalmic goiter, the hyperglycemia was considerable in 25.3 per cent and moderate in 74.7 per cent. Among patients with hyperthyroid-

ism, hyperglycemia was found in 66.6 per cent and hypoglycemia in 33.4 per cent. In patients of the sympatheticotonic type, the development of exophthalmic goiter was accompanied by hyperglycemia and glycosuria. In patients of the vagotonic type, an enhanced sympathetic tonus is compensated by the vagotonia; therefore hyperglycemia and glycosuria may be absent. Eighty-one per cent of the patients belonged to the sympatheticotonic type; among them, hyperglycemia was found in 94.6 per cent and hypoglycemia in 5.4 per cent. Among patients belonging to the vagotonic type, hyperglycemia was found in 23.5 per cent and hypoglycemia in 76.5 per cent. In patients with exophthalmic goiter, belonging to the sympatheticotonic type, hyperglycemia was found in 91.3 per cent and hypoglycemia in 8.7 per cent; in such patients of the vagotonic type, hyperglycemia was found in 20 per cent and hypoglycemia in 80 per cent. In patients with hyperthyroidism and sympathicotonia, hyperglycemia was present in all; in such patients belonging to the vagotonic type, hyperglycemia was present in 28.6 per cent. In cases of exophthalmic goiter as well as of hyperthyroidism, the hyperglycemia or the hypoglycemia proved to be less intense in elderly patients, also when the disease was of long standing. Tests of alimentary hyperglycemia were made in forty-one patients with exophthalmic goiter and in twenty-four patients with hyperthyroidism. The test was positive in twenty-four; 82.7 per cent of them presented an exophthalmic goiter, and 17.3 per cent hyperthyroidism. The threshold of assimilation of sugar appeared to be lower in patients with exophthalmic goiter than in those with hyperthyroidism. Eighty-six patients were treated with roentgen rays. One third of a unit skin dose was applied to the thyroid, at a distance of 23 cm. One or two series, each consisting of from five to seven sittings, were given at intervals of a week; the treatment was repeated after two or three months. One series of irradiations frequently brought about reduction of the blood sugar in cases of hyperglycemia and an increase of the blood sugar in almost all cases of hypoglycemia. This was especially marked in patients with hyperthyroidism. The irradiations remained without effect in cases in which permanent lesions were present in organs regulating the carbohydrate metabolism.

Roentgen Treatment of Syringomyelia.—Kolyu and Rusinov's experience includes twenty-four patients with syringomyelia (fourteen men and ten women). The patients' ages ranged from under 20 to 58; the disease was from one to twelve years' standing. The cervicobulbar type of the disease was observed in one, the cervical type in six, the cervicodorsal type in twelve, and in five the foci were disseminated along the spinal cord. About 125 kilovolts with 3 milliamperes of electric current was employed; the rays were applied to the involved sections of the spinal cord, at a distance of 23 cm. One third of a unit skin dose was used for one irradiation; the latter was repeated after from three to six weeks. The treatment consisted of from two to seven such series. An improvement was sometimes observed within a few days after the first series of irradiations; the effect was maximal after three or four series, more rarely after five series. The improvement was more rapid in four cases in which the disease had persisted from four to twelve years. The sensibility was completely restored or greatly improved; in some cases the irradiations remained without influence. The anesthesia to pain improved in 71 per cent, and the anesthesia to temperature in 58 per cent. The tactile sensibility was completely restored in three of seven patients; in the remainder it appeared unchanged. Pains in the involved sections were observed in ten patients. After the treatment, the pains vanished in one; in two they became less intense, and in seven they remained unchanged. In one of six patients, the paresthesia disappeared; in three it was reduced, and in two unchanged. No improvement of muscular atrophy was noted in seventeen patients; nevertheless the motility improved in eleven of them. The grasping power was increased in eight, in some of whom the increase was considerable; there were no changes in nine. Five patients presented marked trophic disturbances. After the treatment there was no improvement in two patients with cheiromegaly; the results were good in two patients with a periodic numbness of the finger tips and with recurring gangrenous ulcers. The improvement was most manifest in a case of osteo-arthropathy involving the radiocarpal joint. In one case, cyanosis of the wrists completely subsided following roentgen treatment; in the few others it remained unchanged. The results persisted up to one and a half years and in one case up to three years of observation. The authors attribute the appearance of sensibility after the treatment to irritation of the sympathetic nervous system by the roentgen rays. Owing to the action exerted on striated muscles by the sympathetic system, the motility may improve in patients with syringomyelia although the muscular atrophy persists.

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17: 385-433, 1931

*Subcutaneous Oxygen Treatment in Asphyxia Neonatorum. A. Melchior. —p. 385.
So-Called Neuropath. R. P. van de Kasteele.—p. 397.
*Paralysis of Phrenic Nerve in Children. M. de Bruin.—p. 410.
Case of Duodenal Ulcer. J. Slooff.—p. 422.
Hemichorea Caused by Tubercles in Brain. J. Slooff.—p. 424.

Subcutaneous Oxygen Treatment in Asphyxia Neonatorum.—From his experiences in the Vrouwenkliniek with subcutaneous oxygen therapy in asphyxia neonatorum, Melchior concludes that it is not always really beneficial and only rarely positively necessary. But in the cases in which cutaneous oxygen infiltration is necessary, it has great value. And, since one can never know in advance whether or not an important brain lesion is present in asphyxia of the new-born with still perceptible heart action, the use of a prompt subcutaneous inflation of oxygen, in support of the other usual methods, is absolutely indicated. In asphyxia livida, however, one must pursue a waiting policy.

Paralysis of Phrenic Nerve in Children.—De Bruin reports two cases of paralysis of the phrenic nerve in the course of intrathoracic tuberculosis in children. He discusses the case history of a patient who presented this disorder as the result of a birth trauma, which was associated with a paralysis of the brachial plexus on the same side. The literature of this strange manifestation is reported and, in that connection, the clinical picture is discussed in detail. In a Duchenne-Erb paralysis, the functioning of the diaphragm should be tested roentgenologically, in order to rule out a paralysis of the phrenic nerve.

Ugeskrift for Læger, Copenhagen

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*Hormone of Anterior Lobe of Pituitary Body in Urine from Men After Castration. C. Hamburger.—p. 27.
*Case of Traumatic Separation of Epiphysis from Lesser Trochanter. O. Vadsten.—p. 30.
*Case of Infectious Mononucleosis with Meningeal Symptoms. A. H. Johansen.—p. 32.

Pituitary Hormone in Urine of Castrated Men.—Hamburger found hormone of the anterior lobe of the pituitary body, in amounts averaging about 200 mouse units per liter of urine, in the urine from four castrated males, aged from 12 to 61 years, from three weeks to thirteen years after castration. The hormone could not be demonstrated in the urine in three cases of sexual impotence and three of infantilism.

Traumatic Separation of Epiphysis from Lesser Trochanter.—In Vadsten's patient, a boy, aged 15, roentgen examination led to the diagnosis. Ludloff's symptom, which usually points to the condition, was absent.

Infectious Mononucleosis with Meningeal Symptoms.—Johansen's case began as a transient serous meningitis with slight but definite increase in the lymphocyte cells. The lymphocytosis was established before any signs of angina appeared, which, he says, supports the view that the angina is a subordinate and secondary symptom and may in certain cases be absent. No inflammatory swelling of the lymph nodes was noted during the febrile condition; after onset of the angina there was inflammation of the regional lymph nodes. The increase in lymphocyte cells, especially the appearance of immature forms, suggests an acute lymphatic leukemia, but in infectious mononucleosis the lymphatic cells are as a rule found in different degrees of maturity, in acute lymphatic leukemia, only in one stage. This fact, together with the absence of anemia and the good general condition in infectious mononucleosis, is of value in the differential diagnosis between the two conditions.

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